Equity Study

STATE of IDAHO
BOARD of EDUCATION

Phases I and II

submitted to:

Idaho State Board of Education

submitted by:

MGT of America

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June 21, 2001

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In April 2001 the Idaho State Board of Education contracted with MGT of America, Inc. to review the method of allocating funds to the four senior institutions of higher education: Boise State University, Idaho State University, Lewis-Clark State College, and the University of Idaho. The Board receives a lump-sum appropriation that is allocated among the four institutions using a "base-plus" approach for distribution of the funds.

In Phase I of the study, the State Board of Education asked that MGT determine whether there is funding equity among the four institutions. Peer comparisons were to be included in the equity analysis. The Board asked MGT to consider different institutional missions and economies of scale in the alternative methods used to determine funding equity. In addition to this initial request, the State Board requested that funding levels at the Idaho institutions be compared to funding at the peer institutions, and that funding allocation systems of other states be reviewed. To complete the peer comparisons, Phase I also encompassed validation of the peer lists proposed by the four institutions.

If a problem were to be determined to exist, the State Board requested a second phase to the study to recommend changes to the current allocation system that would address the inequities in a practical and sound manner. The proposed allocation system was to provide maximum flexibility to carry out the college and university missions established by the Board; be straightforward so that the Board may use the system to express its funding priorities; relate to institutional needs, the request and appropriation, and the allocation and use of funds; and be predictable and consistently applied.

MGT worked with a Technical Advisory Committee comprised of Board staff and the Vice Presidents for Business or Administration and the institutional research officers of the institutions to validate the peer institutions for each of the four Idaho universities or college; compare funding at the Idaho schools to the peers; evaluate the allocation mechanism, and provide recommendations for improvements. A "peer" is a college or university that is "most like" another college or university based on a group of characteristics such as mission, size, organization, location, mix of programs, and student body characteristics.

To reach the study objectives set forth by the Board, the methodology for the project encompassed five major activities:

- Validation of Peer Institutions;
- Assessment of Funding Equity;
- Development of Consensus on Guiding Principles for Review of the Allocation Mechanism;
- Review of Best Practices in Funding Formulas;
- Review of the Allocation Mechanism; and
- Development of Recommendations.

VALIDATION OF PEER INSTITUTIONS

To validate the lists of peer institutions proposed by the four institutions, MGT used a statistical method called "factor analysis" on the possible peers for each institution. Factor analysis identifies underlying variables called "factors" that explain the pattern of correlation within a set of observed variables. Because there were over 100 variables in the data set, factor analysis permitted the reduction in the number of variables to a more manageable set of factors that enabled comparisons among colleges or universities. Variables were taken from the Integrated Postsecondary Education Data System (IPEDS) surveys. Fiscal year 1999 national data, the latest available, were used for the validation/selection of peers and for the equity analyses related to peer institutions.

The factor analysis developed "factor scores" for each institution for each factor identified in the analysis. A factor analysis that identified 22 factors resulted in each institution in the data set having 22 factor scores, one for each of the 22 factors. Then, the factor scores for each Idaho institution were compared to the factor scores for each other institution in its set to get distance scores. A distance score is defines as the difference between one campus and another on each factor scores. All institutions in the group being compared were then rank ordered based on their total distance score, and arrayed in a list from low to high distance score. The institution with the smallest distance score is the institution most like the Idaho institution.

The lists of all the institutions in the group then were compared to the peer lists chosen by the Idaho institutions. Each institution selected at least 15 peers from those institutions most like them. Exhibit 1 displays peer lists for each of the four institutions.

ASSESSMENT OF FUNDING EQUITY

The next step in the process the funding was to assess the funding of the institutions to determine if the allocation was equitable. MGT assessed funding equity using the following approaches:

- A comparison among Idaho institutions related to long-term trends in state appropriations and tuition.
- A comparison between each institution and its peers on core support per student (i.e., state funding and tuition revenue).
- A comparison between each institution and the national average of similar institutions on core support per student.

Data for this study were obtained from the National Center for Education Statistics Integrated Postsecondary Education Data System (IPEDS) augmented with Idaho data. Idaho data were used for comparisons of enrollment and Idaho funding.

In the first analysis, funding from state appropriations, student tuition and fee revenues, the sum of state appropriations and student tuition and fee revenues, and total educational and general (E & G) revenues was compared. Analyses compared per full-time equivalent (FTE) and headcount student funding for each institution with per FTE or headcount student funding at the peer institutions. The results of this analysis are displayed in Exhibit 2. Exhibit 3 displays the results of the analysis for similar institutions.

EXHIBIT 1
PEER LISTS

Institution	Boise State University	Idaho State University	Lewis-Clark State College	University of Idaho
University of Alaska Anchorage	x			
Arizona State University West	x			
University of Arizona				x
Northern Arizona University	x	x		
University of Arkansas - Fayetteville				x
University of Arkansas Monticello			x	
California State University - Fresno	x			
Colorado State University				x
University of Colorado Denver		x		
University of Northern Colorado	x	x		
Western State College (CO)			x	
University of Hawaii Hilo			x	
Indiana State University		x		
University of Northern Iowa	x	x		
Iowa State University				x
Kansas State University				x
Wichita State University	x	X		
University of Maine Farmington			x	
Lake Superior State (MI)			x	
Southwest State University (MN)			x	
Western Montana University			x	
University of Montana Northern			x	
University of Montana		x		
Montana State University		X		x
University of Nebraska - Lincoln				x
University of Nebraska - Omaha	x	x		
University of Nevada Las Vegas	x	x		
University of Nevada Reno		x		x
New Mexico Highlands University			x	
New Mexico State University		x		x
University of North Dakota		x		
Valley City State University (ND)			x	
Central State University (OH)			x	
Cleveland State University	x			
Oklahoma State University				x
Southeastern Oklahoma State University			x	
Eastern Oregon University			x	
Portland State University	x	x		
Oregon State University				x
Lock Haven University of Pennsylvania			x	
University of South Carolina Aiken			x	
Dakota State University (SD)			x	
Texas A&M Galveston			x	
Texas Tech University				x
University of Texas El Paso	x			
Southern Utah University			x	
Utah State University				x
Weber State University (UT)	x			
George Mason University (VA)	x			
Eastern Washington University	x			
Washington State University				x
West Virginia U Institute of Technology			x	
University of Wyoming		x		x

EXHIBIT 2
COMPARISONS OF FY 1999 UNRESTRICTED REVENUES PER STUDENT
IDAHO INSTITUTIONS AND THEIR PEERS

	Tuition & Fees	State Appropriations	E & G Revenues	Tuition; State and Local Appropriations
Average per FTE, BSU Peers	3,780	6,015	10,540	9,795
BOISE STATE UNIVERSITY	3,436	6,030	10,180	9,466
BOISE STATE AS A % OF PEER AVERAGE	90.9%	100.2%	96.6%	96.6%
Average per FTE, ISU Peers	3,798	6,388	11,833	10,186
IDAHO STATE UNIVERSITY	3,464	6,848	11,121	10,312
AS A % OF PEER AVERAGE	91.2%	107.2%	94.0%	101.2%
Average per FTE, LCSC Peers	3,283	5,554	9,560	8,836
LCSC	2,604	6,292	9,835	8,896
LCSC as a % of peer average	79.3%	113.3%	102.9%	100.7%
Average per FTE, UI Peers	4,170	8,431	15,000	12,617
UNIVERSITY OF IDAHO	3,924	8,345	13,947	12,268
UI as a % of peer average	94.1%	99.0%	93.0%	97.2%
Average per FTE Student, All Peers	3,911	7,066	12,629	10,983
Average, Idaho Institutions	3,528	6,973	11,543	10,501
Idaho as a % of peer average	90.2%	98.7%	91.4%	95.6%
Average per Headcount, BSU Peers	2,753	4,381	7,677	7,134
BOISE STATE UNIVERSITY	2,349	4,123	6,961	6,472
BOISE STATE AS A % OF PEER AVERAGE	85.3%	94.1%	90.7%	90.7%
Average per Headcount, ISU Peers	2,935	4,937	9,146	7,873
IDAHO STATE UNIVERSITY	2,695	5,328	8,652	8,023
AS A % OF PEER AVERAGE	91.8%	107.9%	94.6%	101.9%
Average per Headcount, LCSC Peers	2,749	4,652	8,008	7,401
LCSC	1,954	4,723	7,381	6,677
LCSC as a % of peer average	71.1%	101.5%	92.2%	90.2%
Average per Headcount Student, UI Peers	3,556	7,189	12,790	10,758
UNIVERSITY OF IDAHO	3,225	6,858	11,462	10,083
UI as a % of peer average	90.7%	95.4%	89.6%	93.7%
Average per Headcount Student, All Peers	3,106	5,611	10,030	8,723
Average, Idaho Institutions	2,656	5,251	8,692	7,907
Idaho as a % of peer average	85.5%	93.6%	86.7%	90.7%

EXHIBIT 3
COMPARISONS OF FY 1999 UNRESTRICTED REVENUES PER STUDENT IDAHO INSTITUTIONS AND NATIONAL AVERAGES FOR SIMILAR INSTITUTIONS

	Tuition & Fees	State Appropriations	E & G Revenues	Tuition; State and Local Appropriations
Average per FTE, BSU Group	3,784	5,768	10,477	9,578
BOISE STATE UNIVERSITY	3,436	6,030	10,180	9,466
BOISE STATE AS A % OF GROUP AVERAGE	90.8%	104.5%	97.2%	98.8%
Average per FTE, ISU Group	3,784	5,768	10,477	9,578
IDAHO STATE UNIVERSITY	3,464	6,848	11,121	10,312
AS A % OF GROUP AVERAGE	91.5%	118.7%	106.2%	107.7%
Average per FTE, LCSC Group	3,465	5,415	9,576	8,913
LCSC	2,604	6,292	9,835	8,896
LCSC as a % of Group average	75.2%	116.2%	102.7%	99.8%
Average per FTE, UI Group	5,478	8,701	17,367	14,191
UNIVERSITY OF IDAHO	3,924	8,345	13,947	12,268
UI as a % of Group average	71.6%	85.9%	80.3%	86.5%
Average per FTE Student, All Groups	4,240	6,618	12,451	10,881
Average, Idaho Institutions	3,528	6,973	11,543	10,501
Idaho as a % of Group average	83.2%	105.4%	92.7%	96.5%
Average per Headcount, BSU Group	2,966	4,522	8,213	7,508
BOISE STATE UNIVERSITY	2,349	4,123	6,961	6,472
BOISE STATE AS A % OF GROUP AVERAGE	79.2%	91.2%	84.8%	86.2%
Average per Headcount, ISU Group	2,966	4,522	8,213	7,508
IDAHO STATE UNIVERSITY	2,695	5,328	8,652	8,023
ISU AS A % OF GROUP AVERAGE	90.8%	117.8%	105.3%	106.9%
Average per Headcount, LCSC Group	2,716	4,245	7,507	6,987
LCSC	1,954	4,723	7,381	6,677
LCSC as a % of Group average	72.0%	111.3%	98.3%	95.6%
Average per Headcount Student, UI Group	4,669	7,416	14,802	12,095
UNIVERSITY OF IDAHO	3,225	6,858	11,462	10,083
UI as a % of Group average	69.1%	92.5%	77.4%	83.4%
Average per Headcount Student, All Groups	3,413	5,327	10,022	8,759
Average, Idaho Institutions	2,656	5,251	8,692	7,907
Idaho as a % of All Groups average	77.8%	98.6%	86.7%	90.3%

In FY 1998-99, the Idaho public higher education institutions received less unrestricted educational and general revenue per full-time equivalent student than did the peers, $12,629 per FTES for the peers and $11,543 for Idaho. Similarly, the Idaho institutions received less revenues per FTE student from the combination of state and local appropriations and tuition and fee revenues than did the peers, $10,983 per FTES for the peers and $10,501 for Idaho.

In FY 1998-99, the Idaho public higher education institutions received less unrestricted educational and general revenue per full-time equivalent student than did the total of all institutions in similar classifications, $12,451 per FTES for the comparators and $11,543 for Idaho. Similarly, the Idaho institutions received less revenues per FTE student from the combination of state and local appropriations and tuition and fee revenues than did the comparators, $10,881 per FTES for the peers and $10,501 for Idaho.

If funding was distributed equitably among the four Idaho institutions, it would have been expected that each of the institutions would be at approximately the same level of funding per student relative to its peers. That is, funding among the Idaho institutions would be considered to be equitable if each Idaho institution received approximately the same percent of average peer revenues per student. This would require that Boise State University, Idaho State University, Lewis-Clark State College, and the University of Idaho all be at 90 percent of the peer level of tuition and fee revenues per student, for example.

Because some states provide funding based on headcount students rather than full-time equivalent students, revenues per student were based on the two different student counts. Using both should control for differences among state policies. Similarly, because states maintain different tuition policies, not only were tuition and fees per student and state appropriations per student compared, but also the combination of tuition and state/local appropriations per student was compared. This controls for states whose policy is one of high tuition and relatively lower state appropriations and those states whose policy is low tuition, and relatively higher state appropriations.

The peer data related to FY 1999 revenues for the Idaho institutions and their peers indicate that funding is not equitably distributed among the four Idaho institutions.

Similar analyses were completed using the national data set. National numbers, which include the peer institutions as well as every other public institution in the same classifications, were used to demonstrate that the peers were not chosen based on funding criteria. The data using the national sample (shown in Exhibit 3) demonstrated the same pattern of inequity in funding as the peer institutions. For example, the University of Idaho received 85.9 percent of the average state appropriations per headcount student received by the peers while Idaho State University received 118.7 percent of the average.

Therefore, based on both sets of data, it was concluded that equity did not exist.

To make a determination on equitable distribution of state resources among the Idaho institutions, it is not sufficient to compare data from the Idaho institutions to their peers and to other institutions in the same classification. Many factors contribute to differences in funding, including distribution of students among levels and programs. An institution that enrolls a greater percentage of students in graduate programs would be expected to have more revenues (and expenditures) per student than an institution that enrolled only undergraduate students. Similarly, because certain academic disciplines are resource intensive (such as engineering and health sciences), institutions enrolling a greater proportion of students in those disciplines would be expected to incur greater costs, and have more revenues to support those costs.

One method of recognizing the differences between the costs of providing instruction in different disciplines and at different levels of student enrollment is to weight the credit hours. In other words, to make all weighted credit hours equal, formulas are developed that relate the costs of providing instruction in all disciplines at all levels. Idaho's weighted credit hours are a method of distributing equitable amounts for each credit hour produced at an institution.

Therefore, one of the assessments of funding equity within the Idaho system is to evaluate funding per weighted credit hour. Multiple assessments of equity based on the weighted credit hour were completed: State General Account Funds plus State Endowment Funds per weighted credit hour, Student Fees and Miscellaneous Revenue Funds per weighted credit hour, and Total Appropriated Funds per weighted credit hour.

In addition, calculations were completed for the same revenue categories using full-time equivalent students, full-time equivalent students enrolled in academic programs in the fall semester, and headcount students. The additional calculations were included because not all costs/revenues are related to instruction. Colleges and universities serve multiple constituencies and provide public service, research, and economic development activities as well as instruction. Not all differences in funding that are necessary to ensure equity in resource allocation can be captured by examination of weighted credit hours. For example, differences in mission related to serving the local community are not captured by weighted credit hours. Nor are differences related to the research mission or special programs such as Agricultural Experiment Stations and Cooperative Extension. Unfortunately, workload measures that would incorporate the different missions were not available for this analysis.

Data were compared in these appropriations categories over the ten-year time period, FY 1992 to FY 2001. The staff of the State Board of Education provided appropriations data, student enrollment, and weighted credit hour data. Exhibits 4, 5, 6, and 7 display the analysis for weighted student credit hours, full-time equivalent students, full-time equivalent academic students, and headcount students.

If funding were being allocated in a manner that would provide equity as measured by equal amounts per weighted student credit hour, then it would be expected that the total amounts appropriated per weighted student credit hour would be equal at each college or university. It would not be necessary for student fees or state general and endowment funds to be equal, because the allocation decision could consider the ability of the institution to generate revenues as one component of the equitable amount being distributed.

If funding were equitable in FY 1992, as measured by total appropriations per weighted student credit hour, for funding per weighted student credit hour to be considered equitable in FY 2001, then it would be expected that the same relative relationships would exist in FY 2001 as existed in FY 1992. The relationships did not stay the same. If this funding were to be considered equitable, there should not be more than a 10 percent difference between the high and the low institutions. This “standard” is called the “Federal Disparity Measure” and is one of the measures used to determine equity of funding in education finance court cases.

EXHIBIT 4
COMPARISONS OF APPROPRIATIONS PER WEIGHTED STUDENT CREDIT HOUR

	FY1992	FY1993	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001
State General and Endowment Funds:										
Boise State University	81	75	81	93	94	95	93	93	98	104
Idaho State University	87	81	84	86	87	87	92	100	105	112
Lewis-Clark State College	96	88	92	104	99	103	115	127	1245	133
University of Idaho	115	106	112	121	123	126	131	131	136	143
Student Fees and Miscellaneous Revenues:										
Boise State University	15	17	20	25	26	25	26	27	28	31
Idaho State University	14	15	17	19	20	19	23	25	28	30
Lewis-Clark State College	20	21	24	31	34	34	37	40	39	40
University of Idaho	17	18	20	26	30	30	32	31	32	33
Total Appropriations:										
Boise State University	96	92	100	118	120	120	119	119	126	135
Idaho State University	100	96	101	106	107	107	115	126	133	143
Lewis-Clark State College	116	109	116	135	132	137	152	166	163	172
University of Idaho	132	124	132	148	153	155	163	162	169	177

EXHIBIT 5
COMPARISONS OF APPROPRIATIONS PER FULL-TIME EQUIVALENT STUDENT

	FY1992	FY1993	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001
State General and Endowment Funds:										
Boise State University	4,156	3,894	4,153	4,797	4,871	4,996	5,097	5,357	5,408	5,726
Idaho State University	4,740	4,398	4,737	4,913	4,900	5,021	5,273	5,778	5,983	6,307
Lewis-Clark State College	3,749	3,427	3.448	3,857	3,894	4,127	4,359	4,820	4,891	5,750
University of Idaho	6,722	6,180	6,403	7,075	7,235	7,554	7,831	8,302	8,477	8,838
Student Fees and Miscellaneous Revenues:										
Boise State University	770	869	1,007	1,316	1,367	1,317	1,419	1,535	1,563	1,703
Idaho State University	745	817	958	1,098	1,126	1,102	1,308	1,469	1,572	1,696
Lewis-Clark State College	791	817	907	1,161	1,329	1,348	1,386	1,506	1,526	1,718
University of Idaho	970	1,024	1,139	1,541	1,749	1,782	1,882	1,985	2,016	2,054
Total Appropriations:										
Boise State University	4,926	4,763	5,160	6,113	6,238	6,313	6,516	6,892	6,971	7,419
Idaho State University	5,485	5,215	5,695	6,011	6,026	6,122	6,581	7,247	7,555	8,003
Lewis-Clark State College	4,540	4,244	4,355	5,018	5,222	5,475	5,745	6,326	6,417	7,468
University of Idaho	7,693	7,204	7,543	8,616	8,984	9,336	9,713	10,288	10,493	10,892

EXHIBIT 6
COMPARISONS OF APPROPRIATIONS PER ACADEMIC FULL-TIME EQUIVALENT STUDENT

	FY1992	FY1993	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001
State General and Endowment Funds:										
Boise State University	4,485	4,155	4,420	5,122	5,199	5,364	5,490	5,792	5,826	6,116
Idaho State University	5,469	5,009	5,364	5,552	5,565	5,640	5,966	6,537	6,797	7,095
Lewis-Clark State College	4,696	4,256	4,215	4,774	4,772	5,068	5,280	5,858	5,972	6,966
University of Idaho	6,722	6,180	6,403	7,075	7,235	7,554	7,831	8,302	8,477	8,838
Student Fees and Miscellaneous Revenues:										
Boise State University	831	927	1,072	1,405	1,459	1,413	1,528	1,660	1,684	1,819
Idaho State University	859	931	1,084	1,241	1,279	1,238	1,480	1,662	1,786	1,908
Lewis-Clark State College	991	1,014	1,109	1,437	1,628	1,655	1,678	1,831	1,864	2,081
University of Idaho	970	1,024	1,140	1,541	1,749	1,782	1,882	1,985	2,016	2,054
Total Appropriations:										
Boise State University	5,315	5,082	5,492	6,528	6,658	6,777	7,018	7,452	7,510	7,935
Idaho State University	6,329	5,939	6,449	6,793	6,844	6,878	7,447	8,200	8,582	9,003
Lewis-Clark State College	5,688	5,270	5,324	6,211	6,401	6,723	6,958	7,689	7,838	9,046
University of Idaho	7,693	7,204	7,543	8,616	8,985	9,336	9,712	10,288	10,493	10,892

EXHIBIT 7
COMPARISONS OF APPROPRIATIONS PER HEADCOUNT STUDENT

	FY1992	FY1993	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001
State General and Endowment Funds:										
Boise State University	2,938	2,742	2,857	3,253	3,364	3,457	3,472	3,691	3,780	4,034
Idaho State University	3,673	3,390	3,646	3,719	3,742	3,882	4,104	4,463	4,489	4,641
Lewis-Clark State College	2,770	2,521	2,519	2,814	3,009	3,244	3,382	3,716	4,000	4,448
University of Idaho	5,336	4,942	5,191	5,690	5,828	6,220	6,500	6,743	7,055	7,355
Student Fees and Miscellaneous Revenues:										
Boise State University	544	612	693	892	944	911	967	1,058	1,093	1,200
Idaho State University	577	630	737	831	860	852	1,018	1,135	1,179	1,248
Lewis-Clark State College	585	601	663	847	1,027	1,059	1,075	1,161	1,248	1,329
University of Idaho	770	819	924	1,239	1,409	1,467	1,562	1,613	1,678	1,710
Total Appropriations:										
Boise State University	3,482	3,354	3,550	4,145	4,308	4,368	4,439	4,748	4,873	5,234
Idaho State University	4,250	4,020	4,383	4,550	4,601	4,734	5,122	5,597	5,668	5,889
Lewis-Clark State College	3,355	3,121	3,182	3,661	4,036	4,303	4,457	4,877	5,249	5,778
University of Idaho	6,106	5,761	6,114	6,930	7,237	7,688	8,062	8,356	8,733	9,065

None of the 12 measures in these 4 exhibits of the allocation of resources found equity within the Idaho system. Use of the weighted credit hour was an attempt to measure vertical equity (the unequal treatment of unequals) while the other three student counts were attempts to gauge the existence of horizontal equity. The federal disparity standard used in education finance court cases was the standard against which variation in resources per weighted student credit hour was judged.

Although the variance on several of the measures decreased over time in percentage terms, the dollar variance increased on all 12 measures. The large variances on the 12 measurements of equity in the distribution of resources suggest that **funding among the four institutions is not equitable.**

DEVELOPMENT OF CONSENSUS ON GUIDING PRINCIPLES FOR REVIEW OF THE ALLOCATION MECHANISM

The Technical Advisory Committee agreed on a set of guiding principles to assist in evaluation of the allocation or funding mechanism. The purpose of the guiding principles is to provide an objective framework for evaluating policy alternatives. The set of guiding principles selected is shown in Exhibit 8.

REVIEW OF BEST PRACTICES IN FUNDING FORMULAS

In this component of the study, MGT provided a review of and information on the allocation methods or funding formulas that have been used by systems or states for higher education funding. The review examined the history of the use of funding formulas, the development of allocation mechanisms, economies of scale and scope, guiding principles, other states formulas, and best practices. The best practices delineated in the review were used as benchmarks or guides to recommendations for the improvement of the Idaho allocation model.

REVIEW OF THE ALLOCATION MECHANISM

In this step of the study, the five parts to the Idaho allocation methodology (Base, Enrollment Workload Adjustment, Operations and Maintenance Funds, Decision Units, and Special Allocations) were reviewed using the guiding principles, best practices, and comparisons of spending patterns between the Idaho institutions and their peers.

Base Allocation. The base allocation, which comprises the largest portion of the allocation, does not meet the equity criteria, although it is simple to understand, concerned with stability, and goal-based. The enrollment workload adjustment is the most complicated of the steps in the allocation and was evaluated from several perspectives.

Weights. One of the primary methods used to provide equity in resource allocation is the use of weights. Weighted student credit hours are used in the Idaho workload adjustment as a means of equalizing the costs across academic disciplines and across levels. Lower division, upper division, graduate, and first professional are the four levels recognized in the Idaho calculations.

EXHIBIT 8
DESIRED CHARACTERISTICS OF AN ALLOCATION OR FUNDING FORMULA

Characteristic	*Summary Description*
A. Equitable	The funding formula should provide both horizontal equity (equal treatment of equals) and vertical equity (unequal treatment of unequals) based on size, mission and growth characteristics of the institutions.
B. Adequacy-Driven	The funding formula should determine the funding level needed by each institution to fulfill its approved mission.
C. Goal-Based	The funding formula should incorporate and reinforce the broad goals of the state for its system of colleges and universities as expressed through approved missions, quality expectations and performance standards.
D. Mission-Sensitive	The funding formula should be based on the recognition that different institutional missions (including differences in degree levels, program offerings, student readiness for college success and geographic location) require different rates of funding.
E. Size-Sensitive	The funding formula should reflect the impact that relative levels of student enrollment have on funding requirements, including economies of scale.
F. Responsive	The funding formula should reflect changes in institutional workloads and missions as well as changing external conditions in measuring the need for resources.
G. Adaptable to Economic Conditions	The funding formula should have the capacity to apply under a variety of economic situations, such as when the state appropriations for higher education are increasing, stable or decreasing.
H. Concerned with Stability	The funding formula should not permit shifts in funding levels to occur more quickly than institutional managers can reasonably be expected to respond.
I. Simple to Understand	The funding formula should effectively communicate to key participants in the state budget process how changes in institutional characteristics and performance and modifications in budget policies will affect funding levels.
J. Adaptable to Special Situations	The funding formula should include provisions for supplemental state funding for unique activities that represent significant financial commitments and that are not common across the institutions.
K. Reliant on Valid & Reliable Data	The funding formula should rely on data that are appropriate for measuring differences in funding requirements and that can be verified by third parties when necessary.
L. Flexible	The funding formula should be used to estimate funding requirements in broad categories; it is not intended for use in creating budget control categories.
M. Incentive-Based	The funding formula should provide incentives for institutional effectiveness and efficiency and should not provide any inappropriate incentives for institutional behavior.
N. Balanced	The funding formula should achieve a reasonable balance among the sometimes competing requirements of each of the criteria listed above.

The Idaho mechanism includes in its weights additional consideration for the special missions or primary areas of emphasis at each of the institutions. Thus, this component of the allocation mechanism can be judged to be **mission-sensitive,** and **responsive** to changing institutional workload and missions.

The Idaho weights vary by course level and by category of instructional discipline. The maximum weight given any category is 6.50 for graduate instruction in engineering, the health professions, and computer and information sciences. The weights used by other states tend to be higher at the doctoral level and lower at the master's level than the Idaho weights. In his meta-analysis of the discipline costs of instruction, Brinkman found that upper division costs were, on average, 1.6 to 1.8 times as much as lower division instruction. Masters' level was 4 to 5 times as much; and doctoral education was 8 to 9 times the cost of lower division instruction. The Idaho weights at the upper division and graduate level do not conform to the weights Brinkman found in his meta-analysis, and also vary from the weights used by other states.

Because the assignment of proper weights to instructional disciplines by level of instruction is so critical to the **equity** of any funding or allocation methodology, it is essential that the weights used for the Idaho institutions reflect actual differences in the costs of instruction. As the weights currently exist, masters' level instruction in some disciplines may receive a larger allocation than is necessary to provide **adequate** funding; on the other hand, doctoral level instruction may not be receiving a sufficiently large enough allocation to ensure either **equity or adequacy.**

Rolling three-year Average. Idaho uses a rolling three year average of enrollments to calculate the workload adjustment. A rolling three-year average provides a buffer for institutions when enrollments are declining, and is consistent with the guiding principles stability and responsiveness. However, Idaho includes only one-third of any changes in enrollment or workload in the adjustments. As a result, over time, increases in enrollments are not reflected in institutional budgets, and decreases in enrollments result in funding of "phantom students." This one adjustment has contributed significantly to inequity in the institutional allocations over time.

Exclusion of Professional/Technical Education. Allocation of resources to institutions for the needs of professional/technical and veterinary/medical/dental students is not a component of the general education funding mechanism being evaluated in this study. Institutions receive separate allocations from the State Board of Education for these programs, resulting in lack of coordination and complexity in planning and managing the institutions. When evaluated by the guiding principles, exclusion of these students is dis-equalizing, not mission-sensitive, and inadequate.

Treatment of Non-Resident Students. Non-resident full fee paying students are not included in the workload calculations of the allocation methodology. As operationalized in Idaho, this policy fails the criterion reliant on valid and reliable data, and introduces the opportunity for incentives for inappropriate behavior.

Operations and Maintenance Funds. Each of the four institutions is allocated resources for the operation and maintenance of new educational and general capital improvement projects. In general, these funds are allocated in an equitable manner, are size-sensitive, responsive, adaptable to economic conditions, and reliant on valid data.

Decision Units. Each university and college has received a number of above-the-base budget allocations related to items such as salary increases. These items are based on each university's proportionate share of the base, by Board policy, and thus are equitable.

Special Allocations. Since 1991, each university has received special allocations for items that are of particular interest to the Board such as classroom technology. Each of these allocations is consistent with the mission-sensitive, goal-based, and adaptable to special situations criteria. However, these allocations tend to be dis-equalizing.

In addition to evaluation of the allocation mechanisms by the criteria, comparisons were made to expenditures of peer and comparator institutions. These comparisons were completed to provide another measure of the equity of the allocation methodology. Because expenditures are so closely related to revenues, they are another measure of the equity and adequacy of funding.

Exhibit 9 summarizes the comparisons between the Idaho institutions and their peers while Exhibit 10 provides comparisons to the average expenditures for all institutions in the Carnegie classifications from which the peers were drawn. In FY 1998-99, the Idaho public higher education institutions expended less for unrestricted educational and general goods and services per full-time equivalent student and per headcount student than did the peers, $12,896 per FTES and $10,242 per headcount student for the peers and $10,920 and $8,222 for Idaho. Similarly, the Idaho institutions expended less per FTE student for Instruction and Instruction – related items than did the peers, $7,572 per FTES for the peers and $7,388 for Idaho.

In FY 1998-99, the Idaho public higher education institutions expended less for unrestricted educational and general expenditures per full-time equivalent student than did the total of all institutions in similar classifications, $12,230 per FTES for the peers and $10,920 for Idaho. Idaho institutions, however, expended more per student for Academic Support than did the comparator institutions, $1,603 per FTES for Idaho compared to $1,425 for the comparators, and less than the comparators for Instruction and Instructional-Related items.

If funding were distributed equitably among the four Idaho institutions, it would have been expected that each of the institutions would be able to expend resources at approximately the same level per student relative to its peers. That is, funding among the Idaho institutions would be considered to be equitable if each Idaho institution spent approximately the same percent of average peer expenditures per student.

The peer data related to FY 1999 expenditures for the Idaho institutions and their peers indicate that spending is not equal among the institutions. Since funding is correlated so closely with spending, we can conclude again that funding is not equitably distributed among the four Idaho institutions.

EXHIBIT 9
COMPARISONS OF FY 1999 UNRESTRICTED EXPENDITURES PER STUDENT IDAHO INSTITUTIONS AND THEIR PEERS

	Instruction	Academic Support	E & G Expenditures	Instruction and Instruction-Related*
Average per FTE, BSU Peers	4,840	1,393	10,301	7,008
BOISE STATE UNIVERSITY	4,687	2,174	10,217	7,430
BOISE STATE AS A % OF PEER AVERAGE	96.8%	156.1%	99.2%	106.0%
Average per FTE, ISU Peers	5,266	1,544	11,485	7,548
IDAHO STATE UNIVERSITY	5,477	1,040	9,781	7,008
AS A % OF PEER AVERAGE	104.0%	67.4%	85.2%	92.9%
Average per FTE, LCSC Peers	4,194	923	9,378	6,136
LCSC	4,709	1,530	9,564	7,191
LCSC as a % of peer average	112.3%	165.8%	102.0%	117.2%
Average per FTE, UI Peers	5,848	1,654	14,667	8,186
UNIVERSITY OF IDAHO	5,611	1,541	13,210	7,776
UI as a % of peer average	96.0%	93.2%	90.1%	94.9%
Average per FTE Student, All Peers	5,319	1,508	12,896	7,572
Average, Idaho Institutions	5,196	1,603	10,920	7,388
Idaho as a % of peer average	97.7%	106.3%	84.7%	97.6%
Average per Headcount, BSU Peers	3,525	1,014	7,502	5,104
BOISE STATE UNIVERSITY	3,205	1,486	6,986	5,080
BOISE STATE AS A % OF PEER AVERAGE	90.9%	146.5%	93.1%	99.5%
Average per Headcount, ISU Peers	4,070	1,193	8,877	5,833
IDAHO STATE UNIVERSITY	4,261	809	7,610	5,453
AS A % OF PEER AVERAGE	104.7%	67.8%	85.7%	93.5%
Average per Headcount, LCSC Peers	3,513	773	7,854	5,139
LCSC	3,534	1,148	7,178	5,397
LCSC as a % of peer average	100.6%	148.5%	91.4%	105.0%
Average per Headcount Student, UI Peers	4,986	1,410	12,506	6,980
UNIVERSITY OF IDAHO	4,612	1,266	10,857	6,390
UI as a % of peer average	92.5%	89.8%	86.8%	91.6%
Average per Headcount Student, All Peers	4,225	1,198	10,242	6,013
Average, Idaho Institutions	3,913	1,207	8,222	5,564
Idaho as a % of peer average	92.6%	100.8%	80.3%	92.5%

* Instruction and instruction-related expenditures include academic support and student services expenditures.

EXHIBIT 10
COMPARISONS OF FY 1999 UNRESTRICTED EXPENDITURES PER STUDENT IDAHO INSTITUTIONS AND NATIONAL AVERAGES FOR SIMILAR INSTITUTIONS

	Instruction	Academic Support	E & G Expenditures	Instruction and Instruction-Related
Average per FTE, BSU Group	4,772	1,261	10,238	6,800
BOISE STATE UNIVERSITY	4,687	2,174	10,217	7,430
BOISE STATE AS A % OF GROUP AVERAGE	98.2%	182.3%	99.8%	109.3%
Average per FTE, ISU Group	4,772	1,261	10,238	6,800
IDAHO STATE UNIVERSITY	5,477	1,040	9,781	7,008
AS A % OF GROUP AVERAGE	114.8%	84.3%	95.5%	103.1%
Average per FTE, LCSC Group	4,382	1,002	9,358	6,225
LCSC	4,709	1,530	9,564	7,191
LCSC as a % of Group average	107.5%	152.6%	102.2%	115.5%
Average per FTE, UI Group	7,209	2,087	17,163	10,154
UNIVERSITY OF IDAHO	5,611	1,541	10,857	7,776
UI as a % of Group average	77.8%	73.8%	77.0%	76.6%
Average per FTE Student, All Groups	5,449	1,425	12,230	7,720
Average, Idaho Institutions	5,196	1,603	10,920	7,388
Idaho as a % of Group average	95.4%	112.5%	89.3%	95.7%
Average per Headcount, BSU Group	3,741	988	8,026	5,331
BOISE STATE UNIVERSITY	3,205	1,486	6,986	5,080
BOISE STATE AS A % OF GROUP AVERAGE	85.7%	159.9%	87.0%	95.3%
Average per Headcount, ISU Group	3,741	988	8,026	5,331
IDAHO STATE UNIVERSITY	4,261	809	7,610	5,453
ISU AS A % OF GROUP AVERAGE	113.9%	83.7%	94.8%	102.3%
Average per Headcount, LCSC Group	3,435	786	7,336	4,880
LCSC	3,534	1,148	7,178	5,397
LCSC as a % of Group average	102.9%	146.1%	97.8%	110.6%
Average per Headcount Student, UI Group	6,144	1,779	14,628	8,654
UNIVERSITY OF IDAHO	4,612	1,266	10,857	6,390
UI as a % of Group average	75.1%	71.2%	74.2%	73.8%
Average per Headcount Student, All Groups	4,386	1,147	9,844	6,214
Average, Idaho Institutions	3,913	1,207	8,223	5,564
Idaho as a % of All Groups average	89.2%	105.3%	83.5%	89.5%

DEVELOPMENT OF RECOMMENDATIONS

There are five separate components of the enrollment workload adjustment that were examined in Section E of the report, all of which were contributing to inequities in the funding formula. In addition the components can be adjusted to meet more completely the guiding principles or criteria discussed in Section D. The following options and recommendations were made related to weights, funding of only a portion of the adjustment, exclusion of professional/technical education credit hours, the use of the rolling three year average, and treatment of non-resident students.

One of the primary methods used to provide equity in resource allocation is the use of weights. Weighted student credit hours are used in the Idaho workload adjustment as a means of equalizing the costs across academic disciplines and across levels. Lower division, upper division, graduate, and first professional are the four levels recognized in the Idaho calculations. Academic disciplines also are grouped into four categories The maximum weight given any category is 6.50 for graduate instruction in engineering, the health professions, and computer and information sciences.

Several recommendations were offered related to weights to improve the equity of distribution. The weights are shown in Exhibit F-2 in the body of the report.

RECOMMENDATION 1: ***Primary Emphasis Area Weights***

Option 1: **Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation in much the same manner as now.**

Option 2: **Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation. However, if all four institutions receive additional weights for one discipline such as Education, then the extra weighting should be incorporated into the overall weights.**

RECOMMENDATION 2: ***Weightings by Level and Discipline*****:**

Option 1: **Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and 8 discipline categories to reflect more accurately legitimate differences in the costs of providing instruction across disciplines and levels.**

Option 2**: Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and the current 4 discipline categories.**

Either of these options increase the equity of the distribution by recognizing legitimate cost factors in the production of student credit hours.

RECOMMENDATION 3: *Rolling Three-Year Average:*

Change the Board policy on the rolling three-year average to the following: "The total budget base of the institutions shall be divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution."

Adoption of this recommendation will increase both the adequacy and equity of the allocation mechanism.

RECOMMENDATIONS 4 and 5: *Professional/Technical and Veterinary/Medical Students:*

RECOMMENDATION 4:

Continue to allocate funds for the instructional requirements of professional/technical and Veterinary/Medica*l* students through the current and separate methodology.

RECOMMENDATION 5:

Count professional/technical and Veterinary/Medical students in all components of the allocation mechanism, except instruction.

When taken together, these two recommendations will increase the equity of the allocation, provide for coordinated planning, and recognize the additional costs of providing services to professional/technical and Veterinary/Medical students.

RECOMMENDATION 6: *Non-resident students:*

Option 1: **Count all credit hours earned by non-resident students in the workload adjustment as is done now for those non-resident students who do not pay full fees.**

Option 2: **Count credit hours earned by non-resident students who are receiving a full or partial waiver of fees. Limit the number of full-time equivalent student waivers to a specific percentage of the student body and the total dollar amount of waivers to a specific percentage of tuition revenues.**

Adoption of either of these options will reduce the opportunity for "gaming" the funding mechanism and level the playing field related to the provision of services to non-resident students. This recommendation recognizes that non-resident student enrollment provides economic and social benefits to the State of Idaho.

RECOMMENDATION 7: ***Special Allocations:***

When special allocations are made to more than one of the institutions for the same purpose (such as technology grants), distribute funds to the institutions in proportion to the enrollment, number of staff members, size of budget, or other measure of workload related to the special allocation.

This recommendation addresses the inequities introduced to the base when special allocations above the base are made on a "flat grant" basis. Equity is achieved when the allocation is made on the basis of workload.

RECOMMENDATION 8: ***Base Budgets:***

A new base should be calculated based on "best practices," the guiding principles or criteria for an allocation model, and using the recommendations for weights and the three-year rolling average of student counts enumerated above. In future years, this calculated amount should be the continuation base budget to which or from which adjustments are made. The base amount should be phased in over three years.

This recommendation provides a new base that encompasses the desired characteristics of a good resource allocation model, including equity, adequacy, mission-sensitive, size-sensitive, and reliant of valid and verifiable data. The model presented in the body of the report is intended to be an example of what the base allocations to the institutions might look like under a more equitable base.

The recommendation was developed after examination of inequity from three different perspectives. In the next two months, it is suggested that the universities and Board staff will work to fine tune the recommendations for presentation to the Board at its August meeting.

A. INTRODUCTION

A. Introduction

During a meeting in early 2001, the Idaho State Board of Education directed the staff and the institutions to review the method of allocating funds to the four senior institutions of higher education: Boise State University, Idaho State University, Lewis-Clark State College, and the University of Idaho. The Board receives a lump-sum appropriation that is allocated among the four institutions. The Board currently uses a "base-plus" approach to allocate funds, although a detailed funding formula had been used in the past.

As is true in much of the rest of the western U.S., Idaho has faced population growth in recent years that has resulted in increased enrollment pressures on the four-year institutions. These enrollment pressures have contributed to increased discontent with the allocation methodology. Like many systems in a growth mode, there have been concerns within the Idaho senior institutions that funding is not "equitably" distributed among the institutions, resulting in funding disparities. Various members of the Board of Education and the Idaho Legislature also have voiced these concerns.

The State Board of Education sought to get a thorough and objective review of this critical issue, and decided that it is necessary to secure the services of a national firm with expertise in the area of financing public higher education that has no vested interest in the outcome of the study. As a result of a competitive proposal process, the State Board contracted with MGT of America, Inc. to complete this important study.

In the initial phase of the study, the State Board of Education was interested in determining whether there is funding equity among the four institutions. Peer comparisons were to be included in the equity analysis. The Board asked MGT to consider different institutional missions and economies of scale in the alternative methods used to determine funding equity. In addition to this initial request, the State

Board requested that funding levels at the Idaho institutions be compared to funding at the peer institutions, and that funding allocation systems of other states be reviewed. To complete the peer comparisons, the first component of the study also was to encompass validation of the peer lists proposed by the four institutions.

If a problem were to be determined to exist, the State Board requested a second phase to the study to recommend changes to the current allocation system that will address the inequities in a practical and sound manner. The proposed allocation system should provide maximum flexibility to carry out the college and university missions established by the Board; be straightforward so that the Board may use the system to express its funding priorities; relate to institutional needs, the request and appropriation, and the allocation and use of funds; and be predictable and consistently applied.

The Board directed that a draft report on the study was to be presented to the Board of Education at its June 21, 2001 meeting. This report presents the results of the study: validation of the peer lists and determination of funding equity; analysis of the allocation mechanism, and conceptual recommendations for improvements.

A.1 Overview of Methodology and Related Project Work Tasks

MGT's methodology was designed to address the study in two phases: initial assessment of funding equity (or inequity); and recommendation of changes to the current allocation process, if inequities are found. Because of the very short time frame for the project, the first task was to meet with the Board, the presidents, and other key staff to discuss the goals and objectives for the engagement. A main component of this discussion was to reach agreement on a working definition of "equity" to guide the project activities.

Phase I. During the initial input component of Phase I, MGT met with the presidents and staff at each of the institutions to assess the various perspectives on

funding equity within the system. These meetings served at least two purposes: data collection, and understanding of the special circumstances of each of the institutions and their peer selections. During the initial meetings, discussion of the peer lists presented by the four institutions provided insights into the reasons for selection of particular peer institutions.

MGT worked with each of the institutions to validate the peers and/or to suggest additional/different peers. As an initial step in validation of the peer lists, MGT discussed with each college/university those variables or characteristics that are critical to their mission. Then, MGT employed a factor analytic statistical methodology to determine which institutions are "most like" the Idaho institutions. Briefly, the method used factor analysis to develop factor scores on mission critical variables. Factor scores for all other institutions in a set (e.g. all public doctoral/research intensive or extensive universities) then were compared to the Idaho institutions to develop "distance scores." Institutions with the smallest distance scores, or differences between the factor scores, are the most alike the Idaho institution.

MGT then conducted the actual funding equity analysis. Because experience has demonstrated that there is no single "best way" to conduct a funding equity study, MGT's approach was to analyze the issue from various perspectives. This approach provided a much more comprehensive assessment of funding equity

Finally in Phase I, MGT compiled the analyses and reported these results to the presidents and Board staff.

The work tasks in Phase I were the following:

1. Meet with Board, Presidents, and staff to finalize work plan and project schedule, discuss goals, agree on definition of "equity," and gather information. The purpose of this step was to ensure that all parties were in equal

understanding of the goals and objectives of the project. MGT worked with the universities and board staff to reach an agreement on "equity."

2. Visit institutions. The purpose of this step was to familiarize the consultant with the institutions, learn about mission-critical variables, discuss current conditions, and gather data.

3. Validate peer lists. MGT evaluated peer lists submitted by the four institutions, working with the institutions to validate peer selection or recommend alternate choices.

4. Assess funding equity via multiple approaches. MGT assessed funding equity using the following approaches:

- A comparison among Idaho institutions related to long-term trends in enrollment, state appropriations and tuition per FTE.
- A comparison between each institution and its peers on core support per student (i.e., state funding and tuition revenue).
- A comparison between each institution and the national average of similar institutions on core support per student.

Data for this study were obtained from the National Center for Education Statistics Integrated Postsecondary Education Data System (IPEDS) augmented with Idaho data. Fiscal year 1999 national data, the latest available, were used for the validation/selection of peers and for the equity analyses related to peer institutions. Idaho data were used for comparisons of enrollment and Idaho funding.

5. Prepare draft report on findings for Presidents and Board staff review. A May draft report included detailed tables and documentation of all analyses conducted. The report also assessed whether funding inequities exist within the system, and prepared for conducting the second phase of the study.

Phase II. In Phase II, MGT developed recommendations for any changes to the current allocation process to address inequities found in Phase I. After the decision was made to move into Phase II, MGT began assessment of the current mechanism for allocating resources. In other states where MGT evaluated funding mechanisms, the study began with agreement on a set of guiding principles against which to evaluate funding mechanisms. Such a set of principles was agreed to by the Idaho university staff, and was the first step.

In the next step of the evaluation of the funding mechanism, MGT compared Idaho's funding mechanism to those of other states, focusing on best practices, using the guiding principles developed earlier as a framework. Special attention focused on use of economy of scale factors and relationship of mission to funding. The current funding mechanism was evaluated against the guiding principles, and recommendations developed for improvements.

Next, using material developed in Phase I, where funding at the institutions was compared to funding at the peer institutions, MGT evaluated each component of the current funding mechanism to determine where inequities can be addressed. MGT compared peer expenditures to those of the Idaho institutions. In addition, MGT simulated funding for the Idaho institutions using another state's funding model that is considered "equitable" and incorporates best practices.

From these three sets of comparisons, a set of recommendations for any needed improvements in the Idaho funding "model" was developed and shared with the presidents and Board staff.

The work tasks in Phase II were as follows:

1. Develop set of guiding principles. MGT worked with the institutions and Board staff to develop a set of guiding principles against which the current funding mechanism, and any recommended changes, can be evaluated.

2. Compare Idaho's funding mechanism to other states'. Focusing on best practices, MGT compared Idaho's current mechanism against the guiding principles and the best practices used by other states.

3. Compare funding at the peers. In this step, MGT compared peer expenditures to those of the Idaho institutions, or other comparator groups. In addition, MGT simulated funding for Idaho institutions using other state's formula.

4. Prepare draft report on findings for Presidents and Board staff review. This report includes detailed tables and documentation of all analyses conducted.

5. Finalize report. MGT will incorporate the edits and issue a final report after additional review by the institutions and Board staff.

6. Make presentation to Board of Education. MGT will make a presentation of the study results to the Board, and other interested parties, after the final report is completed.

B. PEER VALIDATION

B. PEER VALIDATION

This section of the Phase I report will address the validation of peer institutions for the four Idaho four-year universities and college. The chapter is organized into sections on general peer analysis, criteria for peer selection, selection methodology, and lists of peers for each of the four institutions.

B.1 Peer Analysis

A "peer" is a college or university that is "most like" another college or university based on similarities on a group of variables like mission, size, organization, control, location, mix of programs, and study body characteristics. Colleges and universities use groups of peers to compare their performance on characteristics and/or to request additional funding to support initiatives.

Colleges, state systems, and legislative analysts have used peers to set tuition, recommend faculty salaries, compare expenditures per full-time equivalent student, compare legislative appropriations, and adjust student/faculty ratios. In 1996, a majority of states were using peers in their funding models; 26 states used peer data for salary purposes; 17 for tuition and fee setting; 10 for determining overall funding levels; and six for determining funding for libraries.[1]

Peers may be determined for *one institution* based on sets of characteristics that indicate "alikeness" or "similarity," or peers may be determined for a *set of institutions*. An individual institution may use peers for internal comparison purposes. For example, peers can be established for each academic department, or for each business office in the university. Generally, peers are determined for "general" purposes, and the same set of peers is used for all comparisons that a college or university may make. However,

some colleges have one set of peers for determining tuition, another set of peers for comparisons of faculty and staff salaries and compensation, and a third set for funding comparisons.

A set of peers typically includes at least ten and preferably fifteen colleges or universities because not all will elect to participate in data collection efforts. A peer group smaller than ten may not provide sufficient data to yield valid or reliable information. The peer group may include all actual peers, or it may include "aspirational" peers. Aspirational peers are those that the institution aspires to be like on some criterion, such as faculty salary or compensation levels, or academic reputation.

To determine a set of peers, colleges or coordinating/governing boards may use several methods: geographic location, membership in an organization or externally determined group, or statistical analysis.

Geographic Proximity. All of the colleges in the contiguous states may be used as peers; or other colleges in the same state that have been assigned the same Carnegie Classification. Geographic proximity is used because it is thought that the nearby colleges are those with which the university competes for students and staff. The Southern Regional Education Board (SREB) and the Western Interstate Commission on Higher Education (WICHE) maintain detailed data bases on the colleges and universities in their region. These data form the basis for geographic peer comparisons. Geographic peer selection is used most often for comparisons of tuition and fees.

Membership in Athletic Conferences, Organizations, or in the Same Carnegie Classification. Carnegie Classifications are categorizations of colleges and

[1] McKeown, Mary P. "State Funding Formulas: Promise Fulfilled?" in *A Struggle to Survive. Funding Higher Education in the Next Century,* Honeyman, D.S., J.L. Wattenbarger, and K.C. Westbrook (eds.) Thousand Oaks, CA: Corwin Press. 1996.

universities using a method designed by the Carnegie Commission for the Advancement of Teaching. Until 2000, colleges and universities were classified as Research I, Research II, Doctoral I, Doctoral II, Comprehensive I, Comprehensive II, Liberal Arts I, Liberal Arts II, Two Year, or Specialized Campus. In fall 2000, the Carnegie Commission revised those classifications to Doctoral/Research Extensive, Doctoral/Research Intensive, Masters (comprehensive) I, Masters (Comprehensive) II, Baccalaureate College – Liberal Arts, Baccalaureate College – General, Baccalaureate/Associate College, Associate College, or Specialized Campus.

Some colleges and universities use membership in Carnegie Classification or in an athletic conference as the only criterion for determining peers. For examples, members of the Big Ten Athletic Conference compare data on physical plant, libraries, planning, enrollment trends, and other data items. The universities that are members of the Association of American Universities (AAU) have detailed data that are shared among member institutions. Data include items such as rank of faculty and class size by discipline and level. Membership is used most often for peer selection for plant, library, and faculty comparisons.

Statistical Analysis. To determine peers, some colleges or governing/coordinating boards use statistical analysis techniques. The analysis may be simple or quite complex. A simple analysis may use only one variable to select peers, such as all colleges of a certain size, no matter what the location, organization, or control.

More complex statistical methodologies involve upwards of 150 variables in determining the set of peer institutions. Variables include size, location, organization, control, mix of academic programs, types of students served, graduation rates, or any of a number of other variables.

Typically the peer selection will start with one variable that is used as the major criterion to eliminate most of the 4,800 colleges and universities in the United States. For example, only public colleges may be included in the selection group. Then, the group may be further winnowed by elimination of all colleges above or below a certain enrollment.

The most complex method for selecting peers involves completing factor analyses or cluster analyses to determine which colleges have the most alike factor scores, or which cluster together based on the variables used. A set of "difference" scores may be computed, which are used to determine how alike two institutions are on a variable or factor. The difference scores are summed across all variables or factors, and those colleges with the smallest total difference score become the set of peers.

B.2 Criteria for Peer Selection

The process of validating peers for each of the four Idaho institutions began with development of a set of criteria or variables that were selected in cooperation with each institution. In identifying potential peer institutions, the primary selection criterion reflected the mission of the institution, as approved by the State Board of Education.

Variables chosen are shown as Exhibit B-1. Not all variables included in the set were used for each institution; only those disciplines identified as primary Emphasis areas were included for each institution. For Lewis-Clark State College, for example, the discipline areas included were business, criminal justice, nursing, social work, and education. Specific variables for each institution are shown in Appendix A.

EXHIBIT B-1
VARIABLES/CRITERIA FOR USE IN VALIDATING PEERS

1. **Public Control**
2. **Carnegie Classification**
3. **Number of headcount students by level and part-time or full-time status**
4. **Percent part-time and percent full-time students**
5. **Location in urban/rural/suburban area**
6. **Number of full-time equivalent students**
7. **Number of degrees awarded**
8. **Number of associates degrees awarded**
9. **Number of bachelor's degrees awarded**
10. **Number of master's degrees awarded**
11. **Number of doctoral degrees awarded**
12. **Number of first professional degrees awarded**
13. **Degrees awarded by field and percent degrees awarded by field**
14. **Total sponsored research expenditures**
15. **Land grant status**
16. **Discipline mix and number of disciplines**
17. **Number of staff by category**

B.3 Peer Validation or Selection Methodology

For each institution, a "sample" of institutions was drawn from the list of all public colleges and universities in the U.S. For the University of Idaho, all public institutions classified previously as Research I, Research II, Doctoral I or Doctoral II were included. (These institutions would be classified as Research Extensive or Research Intensive under the 2000 Carnegie Classifications.) For Boise State University and Idaho State University, all public Doctoral I or II or Comprehensive I and II campuses were included in the list; and, for Lewis-Clark State College all institutions classified as Comprehensive I or II or Baccalaureate I or II were included in the sample.

For the University of Idaho, both Research I and II and Doctoral I and II campuses were included because the new Carnegie classifications include these campuses in the Research Extensive or Intensive categories. Inclusion of only Research I or II universities would have limited the selection to fewer than 70 schools, with less than 40 campuses in the western part of the U.S. For Boise State University and Idaho State University, Doctoral I and II and Comprehensive I and II campuses were included because this grouping is consistent with the mission of the two Idaho universities.

Boise State University and Idaho State University also provide associate education and technical and workforce training programs that are unlike most doctoral granting institutions in the United States. Lewis-Clark State College shares the technical training and associate education components in its mission. Lewis-Clark was compared to all Baccalaureate I and II institutions as well as those institutions that used to be classified as Associate institutions that awarded some bachelors' and masters' degrees.

Data were taken from the most recent and available IPEDS institutional characteristics, fall enrollment, staffing, degrees awarded, and finance surveys

(FY 1999), and combined into one file for each of the Idaho institutions. Each college or university who asked for a copy of the data file received it.

To develop an initial listing of "peers," a factor analysis was completed on the combined data file for each group (Research I and II and Doctoral I and II; Doctoral I and II and Comprehensive I and II; and Baccalaureate I and II with two-year campuses that award bachelors and masters degrees). Factor analysis identifies underlying variables called "factors" that explain the pattern of correlation within a set of observed variables. Because there were over 100 variables in the data set, factor analysis permitted the reduction in the number of variables to a more manageable set of factors that enabled comparison among colleges or universities. The factors identified by the statistical technique explained over 80 percent of the variance or differences among campuses.

For an initial factor analysis for each institution, the statistical package (SPSS) completed a general factor analysis with no constraints placed on the number of factors, and with no constructed or weighted variables. In other words, an analysis was completed using only the variables available in the data set; no variables (such as the number of graduate students as percent of the total headcount enrollment) were calculated for inclusion in the factor analysis. In addition, only a basic factor analysis was run, with no rotation and no other special settings.

The factor analysis developed "factor scores" for each institution for each factor identified in the analysis. A factor analysis that identified 22 factors resulted in each institution having 22 factor scores, one for each of the 22 factors. Then, the factor scores for each institution in Idaho were compared to the factor scores for each other institution in its "sector" to get distance scores. A distance score is defined as the difference between one campus and another on each factor score. Each of the distance scores was squared to eliminate negative numbers, and the squared distance or difference scores summed to get a combined "distance score" for the Idaho institution and the other

institution. All institutions in the sector then were rank ordered based on their distance score, and arrayed in a list from low to high distance score. The institution with the smallest distance score is the institution most like the Idaho institution.

For each Idaho institution, up to ten additional factor analytic runs were completed, based on the college's or university's Primary Emphasis areas, mission, and location. Addition of variables that could not be constructed from the data set available for all colleges and universities were not allowed. In addition, financial information was not included in the selection variables.

Institutions most like the Idaho institutions then were compared to each institution's suggested peer list. These peer lists had been presented to the State Board of Education as part of its April 2001 Board meeting. MGT reviewed each institution's peer list, and suggested additional peers to bring the number of peers for each Idaho institution to at least 15. Suggestions for peers were made from those institutions that were most like the Idaho institutions using multiple factor analyses.

Each institution then determined its final peer list, which included at most three aspirational peers. Peer selections were returned to MGT and additional clarifications and analyses of the lists were completed to ensure valid lists of institutions that were similar to the Idaho institutions. Several peers, including the University of Northern Colorado and the University of Nebraska Omaha, are peers of two of the Idaho institutions.

B.4 Peer Lists

Exhibit B-2 displays the peers used in the remainder of this analysis of equity in funding.

EXHIBIT B-2
PEER LISTS

Institution	Boise State University	Idaho State University	Lewis-Clark State College	University of Idaho
University of Alaska Anchorage	x			
Arizona State University West	x			
University of Arizona				x
Northern Arizona University	x	x		
University of Arkansas - Fayetteville				x
University of Arkansas Monticello			x	
California State University - Fresno	x			
Colorado State University				x
University of Colorado Denver		x		
University of Northern Colorado	x	x		
Western State College (CO)			x	
University of Hawaii Hilo			x	
Indiana State University		x		
University of Northern Iowa	x	x		
Iowa State University				x
Kansas State University				x
Wichita State University	x	X		
University of Maine Farmington			x	
Lake Superior State (MI)			x	
Southwest State University (MN)			x	
Western Montana University			x	
University of Montana Northern			x	
University of Montana		x		
Montana State University		X		x
University of Nebraska - Lincoln				x
University of Nebraska - Omaha	x	x		
University of Nevada Las Vegas	x	x		
University of Nevada Reno		x		x
New Mexico Highlands University			x	
New Mexico State University		x		x
University of North Dakota		x		
Valley City State University (ND)			x	
Central State University (OH)			x	
Cleveland State University	x			
Oklahoma State University				x
Southeastern Oklahoma State University			x	
Eastern Oregon University			x	
Portland State University	x	x		
Oregon State University				x
Lock Haven University of Pennsylvania			x	
University of South Carolina Aiken			x	
Dakota State University (SD)			x	
Texas A&M Galveston			x	
Texas Tech University				x
University of Texas El Paso	x			
Southern Utah University			x	
Utah State University				x
Weber State University (UT)	x			
George Mason University (VA)	x			
Eastern Washington University	x			
Washington State University				x
West Virginia U Institute of Technology			x	
University of Wyoming		x		x

C. DETERMINATION OF EQUITY IN FUNDING

C. DETERMINATION OF EQUITY IN FUNDING

This chapter describes the review of funding among the four institutions, criteria used in the review of equity, and determination of funding equity among the four senior Idaho institutions.

C.1 Analysis of Funding Equity Using Data from National Sources

For this phase of the analysis, data were collected from each institution's IPEDS Finance Report to the U. S. Department of Education, because these data are reported in a common format following generally accepted accounting principles. Adjustments were made to the IPEDS data to achieve greater comparability and comparisons of each of the institutions to the peers. Analyses focus on comparative measures of funding: appropriations from state sources; student tuition and fee revenues; the sum of state and local appropriations and tuition and fee revenues; and total educational and general revenues. Analyses compared per FTE and headcount student funding for each institution with per FTE student or headcount funding at the peer institutions.

The data sources for these analyses were the FY 1998-99 IPEDS finance survey and fall 1998 Student Enrollment survey from the National Center for Education Statistics (NCES). The FY 1998-99 finance survey data are the latest financial information available from NCES; fall 1998 student enrollment data are the appropriate matching enrollments. Data were "cleaned" to ensure the highest level of comparability possible. The revenue domain used for these analyses was unrestricted state and local appropriations; unrestricted tuition and fee revenue; the sum of unrestricted state and local appropriations and tuition and fee revenues; and total unrestricted educational and general revenues. Because the Idaho institutions report State Endowment Funds in the "unrestricted endowment income" category, these revenues were included as part of unrestricted state appropriations to be consistent with similar funds reported in the state

appropriations category by other institutions. Full-time equivalent students (FTES) were calculated from the IPEDS Student Enrollment Survey by adding one-third the number of part-time students to the number of full-time students. This method for calculating FTES is the one used by NCES, and is ***not*** the same as the method Idaho uses in its reports. Data for the peers were not available to calculate FTES in the manner that the State Board of Education uses.

Exhibit C-1 summarizes the comparisons between the Idaho institutions and their peers while Exhibit C-2 provides comparisons to the average revenues for all institutions in the Carnegie classifications from which the peers were drawn. Exhibits C-3 through C-14 provide data for each institution and include exhibits that display total, per headcount student, and per full-time equivalent student (FTES) unrestricted revenues for each of the institutions and their peers.

In FY 1998-99, the Idaho public higher education institutions received less unrestricted educational and general revenue per full-time equivalent student than did the peers, $12,629 per FTES for the peers and $11,543 for Idaho. Similarly, the Idaho institutions received less revenues per FTE student from the combination of state and local appropriations and tuition and fee revenues than did the peers, $10,983 per FTES for the peers and $10,501 for Idaho. (See Exhibit C-1.)

Exhibit C-2 displays summary data on unrestricted revenues for the core functions of the Idaho institutions compared to all institutions from which the peer institutions were selected. In FY 1998-99, the Idaho public higher education institutions received less unrestricted educational and general revenue per full-time equivalent student than did the total of all institutions in similar classifications, $12,451 per FTES for the comparators and $11,543 for Idaho.

EXHIBIT C-1
COMPARISONS OF FY 1999 UNRESTRICTED REVENUES PER STUDENT
IDAHO INSTITUTIONS AND THEIR PEERS

	Tuition & Fees	State Appropriations	E & G Revenues	Tuition; State and Local Appropriations
Average per FTE, BSU Peers	3,780	6,015	10,540	9,795
BOISE STATE UNIVERSITY	3,436	6,030	10,180	9,466
BOISE STATE AS A % OF PEER AVERAGE	90.9%	100.2%	96.6%	96.6%
Average per FTE, ISU Peers	3,798	6,388	11,833	10,186
IDAHO STATE UNIVERSITY	3,464	6,848	11,121	10,312
AS A % OF PEER AVERAGE	91.2%	107.2%	94.0%	101.2%
Average per FTE, LCSC Peers	3,283	5,554	9,560	8,836
LCSC	2,604	6,292	9,835	8,896
LCSC as a % of peer average	79.3%	113.3%	102.9%	100.7%
Average per FTE, UI Peers	4,170	8,431	15,000	12,617
UNIVERSITY OF IDAHO	3,924	8,345	13,947	12,268
UI as a % of peer average	94.1%	99.0%	93.0%	97.2%
Average per FTE Student, All Peers	3,911	7,066	12,629	10,983
Average, Idaho Institutions	3,528	6,973	11,543	10,501
Idaho as a % of peer average	90.2%	98.7%	91.4%	95.6%
Average per Headcount, BSU Peers	2,753	4,381	7,677	7,134
BOISE STATE UNIVERSITY	2,349	4,123	6,961	6,472
BOISE STATE AS A % OF PEER AVERAGE	85.3%	94.1%	90.7%	90.7%
Average per Headcount, ISU Peers	2,935	4,937	9,146	7,873
IDAHO STATE UNIVERSITY	2,695	5,328	8,652	8,023
AS A % OF PEER AVERAGE	91.8%	107.9%	94.6%	101.9%
Average per Headcount, LCSC Peers	2,749	4,652	8,008	7,401
LCSC	1,954	4,723	7,381	6,677
LCSC as a % of peer average	71.1%	101.5%	92.2%	90.2%
Average per Headcount Student, UI Peers	3,556	7,189	12,790	10,758
UNIVERSITY OF IDAHO	3,225	6,858	11,462	10,083
UI as a % of peer average	90.7%	95.4%	89.6%	93.7%
Average per Headcount Student, All Peers	3,106	5,611	10,030	8,723
Average, Idaho Institutions	2,656	5,251	8,692	7,907
Idaho as a % of peer average	85.5%	93.6%	86.7%	90.7%

EXHIBIT C-2
COMPARISONS OF FY 1999 UNRESTRICTED REVENUES PER STUDENT
IDAHO INSTITUTIONS AND NATIONAL AVERAGES FOR SIMILAR INSTITUTIONS

	Tuition & Fees	State Appropriations	E & G Revenues	Tuition; State and Local Appropriations
Average per FTE, BSU Group	3,784	5,768	10,477	9,578
BOISE STATE UNIVERSITY	3,436	6,030	10,180	9,466
BOISE STATE AS A % OF GROUP AVERAGE	90.8%	104.5%	97.2%	98.8%
Average per FTE, ISU Group	3,784	5,768	10,477	9,578
IDAHO STATE UNIVERSITY	3,464	6,848	11,121	10,312
AS A % OF GROUP AVERAGE	91.5%	118.7%	106.2%	107.7%
Average per FTE, LCSC Group	3,465	5,415	9,576	8,913
LCSC	2,604	6,292	9,835	8,896
LCSC as a % of Group average	75.2%	116.2%	102.7%	99.8%
Average per FTE, UI Group	5,478	8,701	17,367	14,191
UNIVERSITY OF IDAHO	3,924	8,345	13,947	12,268
UI as a % of Group average	71.6%	85.9%	80.3%	86.5%
Average per FTE Student, All Groups	4,240	6,618	12,451	10,881
Average, Idaho Institutions	3,528	6,973	11,543	10,501
Idaho as a % of Group average	83.2%	105.4%	92.7%	96.5%
Average per Headcount, BSU Group	2,966	4,522	8,213	7,508
BOISE STATE UNIVERSITY	2,349	4,123	6,961	6,472
BOISE STATE AS A % OF GROUP AVERAGE	79.2%	91.2%	84.8%	86.2%
Average per Headcount, ISU Group	2,966	4,522	8,213	7,508
IDAHO STATE UNIVERSITY	2,695	5,328	8,652	8,023
ISU AS A % OF GROUP AVERAGE	90.8%	117.8%	105.3%	106.9%
Average per Headcount, LCSC Group	2,716	4,245	7,507	6,987
LCSC	1,954	4,723	7,381	6,677
LCSC as a % of Group average	72.0%	111.3%	98.3%	95.6%
Average per Headcount Student, UI Group	4,669	7,416	14,802	12,095
UNIVERSITY OF IDAHO	3,225	6,858	11,462	10,083
UI as a % of Group average	69.1%	92.5%	77.4%	83.4%
Average per Headcount Student, All Groups	3,413	5,327	10,022	8,759
Average, Idaho Institutions	2,656	5,251	8,692	7,907
Idaho as a % of All Groups average	77.8%	98.6%	86.7%	90.3%

Similarly, the Idaho institutions received less revenues per FTE student from the combination of state and local appropriations and tuition and fee revenues than did the comparators, $10,881 per FTES for the peers and $10,501 for Idaho. These data are discussed for each of the institutions in the following sections.

C.1.a. Boise State University

Boise State University received 96.6 percent of the average unrestricted revenues received by its peers in FY 1999. Total unrestricted Educational and General (E & G) revenues per full-time equivalent student in FY99 totaled $10,540 per FTES for the peers and $10,180 for BSU. In FY99 Boise State received $344 less per student from tuition revenues, $15 more per FTE student from unrestricted state appropriations, and $329 per FTES less in the combination of tuition and appropriations. Similarly, in FY99 Boise State received $404 less per headcount student from tuition revenues, $258 less per student from unrestricted state appropriations, and $662 per headcount student less in the combination of tuition and state and local appropriations. The peer institutions received more revenue per student from other sources including federal grants and contracts, local contracts, other sources, and endowment income.

When compared to its sister Idaho institutions, Boise State University's receives a smaller proportion of its revenues from tuition and fees than do Idaho State and the University of Idaho, relative to the peers. However, BSU is second to UI in the percentage of the peer average FTE funding received from unrestricted state appropriations, and last in the percentage of the peer average headcount funding. These data are displayed in Exhibits C-3, C-4, and C-5.

When compared to all Comprehensive I and II and Doctoral I and II public universities, BSU received more per FTE student in unrestricted state appropriations, and 97.2 percent of the group in total unrestricted E & G revenues.

C.1.b. Idaho State University

In FY99 Idaho State University received $334 less per FTES in tuition revenues than did the peers, and $460 more in unrestricted state appropriations. (See Exhibits C-6, C-7, and C-8.) The peers received more per student in other categories, and ISU's

total unrestricted E & G revenues per FTES were $712 less than its peers. In FY99, ISU received $494 less per headcount student from unrestricted E & G revenues, and $391 more per headcount student from unrestricted state appropriations. ISU received more per headcount student than the peers in endowment income and from other sources.

When compared to the other Idaho institutions, relative to the peer institutions, Idaho State received 107.2 percent of the peer average per FTE student from state appropriations; and relatively more than the other Idaho institutions from the combination of tuition and state/local appropriations per student.

In comparison to all other Doctoral I and II or Comprehensive I and II public institutions, ISU received more than 118 percent of the group average per student from state appropriations. In addition, Idaho State University received more total unrestricted Education and General revenues per student than did the average of "similar" institutions.

C.1.c. Lewis-Clark State College

In FY 1999 Lewis-Clark State College received $738 more per full-time equivalent student from state appropriations than did its peer institutions, and $71 more per headcount student. (Note: This finding implies that LCSC either has more part-time students, or its students take smaller credit hour loads than do students at the peer institutions.) When the sum of unrestricted state and local appropriations and tuition revenues per full time equivalent student are compared, LCSC received $8,896 per FTE student compared to a peer average of $8,836. Peer institutions received significantly more in tuition and fees per FTES than LCSC.

Exhibits C-9, C-10, and C-11 provide data on the revenues received by LCSC and its peer institutions for FY 1999. When compared to all public baccalaureate institutions, (Exhibit C-2) LCSC had tuition and fee revenues of $2,604 per FTES compared to an

average $3,465 for all baccalaureate institutions; other baccalaureate institutions received about $17 more per FTES from unrestricted state appropriations and tuition revenues.

Compared to the other Idaho institutions, LCSC has less E & G revenues per FTE student and less tuition revenue. When data based on headcount students are compared, LCSC received the least per student from tuition revenue but more than BSU from the combination of tuition revenues and state/local appropriations.

C.1.d. University of Idaho

In FY99 the University of Idaho received less unrestricted E & G revenues and state appropriations per student than its peers did. On average, the peer institutions received about $250 more per FTES from unrestricted tuition and fees, and $86 less per FTES from unrestricted state appropriations. When all unrestricted E & G revenues are compared, the University of Idaho received $1,050 per FTES less than the peers did. These data are displayed in Exhibits C-12, C-13, and C-14.

The same pattern exists when the data per headcount student are examined. The University of Idaho received $3,225 per headcount student from unrestricted tuition revenues compared to an average $3,556 for the peers. State appropriations were approximately $330 per headcount student less than the peers and total E & G revenues were $1,328 less per headcount student than the peers received.

When compared to all public research or doctoral universities (Exhibit C-2), the University of Idaho received approximately 80 percent of the revenues per full-time equivalent or headcount student received by the other universities. These percentages are substantially less, relative to the national groups than those of the other Idaho institutions.

C.1.e. Summary of Findings Related to Peer Data

If funding was distributed equitably among the four Idaho institutions, it would have been expected that each of the institutions would be at approximately the same level of funding per student relative to its peers. That is, funding among the Idaho institutions would be considered to be equitable if each Idaho institution received approximately the same percent of average peer revenues per student. This would require that Boise State University, Idaho State University, Lewis-Clark State College, and the University of Idaho all be at 90 percent of the peer level of tuition and fee revenues per student, for example. Or, that all four institutions received about 100 percent of the state appropriations per student received by the peers. Or, that all were at 95 percent of the average revenue per student received from the combination of tuition and state/local appropriations.

Because some states provide funding based on headcount students rather than full-time equivalent students, revenues per student were based on the two different student counts. Using both should control for differences among state policies.

Similarly, because states maintain different tuition policies, not only were tuition and fees per student and state appropriations per student compared, but also the combination of tuition and state/local appropriations per student was compared. This controls for states whose policy is one of high tuition and relatively lower state appropriations and those states whose policy is low tuition, and relatively higher state appropriations.

The peer data related to FY 1999 revenues for the Idaho institutions and their peers indicate that funding is not equitably distributed among the four Idaho institutions.

Tuition and fee revenues per headcount student varied from 71.1 percent of the peer average at LCSC to 91.8 percent of the peer average at ISU. Tuition and fee

revenues per FTE student varied from 79.3 percent of the peer average at LCSC to 90.9 percent at BSU, to 91.2 percent at ISU, and to 94.1 percent at UI. Because these percentage differences may reflect varying percentages of out-of-state students, additional analysis will be necessary in Phase II.

When state appropriations levels per FTES are compared, the University of Idaho received 99.0 percent of the peer average, while the other three institutions exceeded 100 percent. Based on headcount students, state appropriations at LCSC were 101.5 percent of the peer average, compared to 107.9 percent of the peer average at ISU.

Total Educational and General Revenues, which include other sources of revenues such as indirect cost recovery from grants and endowment income, also varied significantly among the four institutions. UI received 93 percent of E and G revenues per FTES at the peers, while LCSC received 102.9 percent.

Similarly, when revenues from the combination of tuition and state/local appropriations are compared, BSU received 90.7 percent of the peer average per headcount student compared to 101.9 percent at ISU.

To place these numbers in the context of all public institutions similar to the Idaho institutions, similar analyses were completed using the national data set. National numbers, which include the peer institutions as well as every other public institution in the same classifications, were used to demonstrate that the peers were not chosen based on funding criteria.

The data using the national sample (shown in Exhibit C-2) demonstrated the same pattern of inequity in funding as the peer institutions. For example, the University of Idaho received 85.9 percent of the average state appropriations per headcount student received by the peers while Idaho State University received 118.7 percent of the average.

Therefore, based on both sets of data, it was concluded that equity did not exist.

C.2 Analysis of Funding Levels Using Idaho Data

To make a determination on equitable distribution of state resources among the Idaho institutions, it is not sufficient to compare data from the Idaho institutions to their peers and to other institutions in the same classification. Many factors contribute to differences in funding, including distribution of students among levels and programs. An institution that enrolls a greater percentage of students in graduate programs would be expected to have more revenues (and expenditures) per student than an institution that enrolled only undergraduate students. Similarly, because certain academic disciplines are resource intensive (such as engineering and health sciences), institutions enrolling a greater proportion of students in those disciplines would be expected to incur greater costs, and have more revenues to support those costs.

Because of the differences in institutional roles, missions, and clientele, states appropriate differing amounts to each institution. To provide equity in the distribution of resources, states and governing/coordinating boards developed funding formulas or guidelines that recognize the differences among institutions while providing an equal amount for the same activity at each institution. For example, funding methodologies typically allocate the same dollar amount for one credit hour of freshman English to all institutions, but a different amount for one credit hour of master's level psychology.

One method of recognizing the differences between the costs of providing instruction in different disciplines and at different levels of student enrollment is to weight the credit hours. In other words, to make all weighted credit hours equal, formulas are developed that relate the costs of providing instruction in all disciplines at all levels. Idaho's weighted credit hours are a method of distributing equitable amounts for each credit hour produced at an institution.

Therefore, one of the assessments of funding equity within the Idaho system is to evaluate funding per weighted credit hour. Multiple assessments of equity based on the weighted credit hour were completed: State General Account Funds plus State Endowment Funds per weighted credit hour, Student Fees and Miscellaneous Revenue Funds per weighted credit hour, and Total Appropriated Funds per weighted credit hour.

In addition, calculations were completed for the same revenue categories using full-time equivalent students, full-time equivalent students enrolled in academic programs in the fall semester, and headcount students. The additional calculations were included because not all costs/revenues are related to instruction. Colleges and universities serve multiple constituencies and provide public service, research, and economic development activities as well as instruction. Not all differences in funding that are necessary to ensure equity in resource allocation can be captured by examination of weighted credit hours. For example, differences in mission related to serving the local community are not captured by weighted credit hours. Nor are differences related to the research mission or special programs such as Agricultural Experiment Stations and Cooperative Extension. Unfortunately, workload measures that would incorporate the different missions were not available for this analysis.

Data were compared in these appropriations categories over the ten-year time period, FY 1992 to FY 2001. The staff of the State Board of Education provided appropriations data, student enrollment, and weighted credit hour data.

C.2.a Weighted Credit Hour Comparisons

Exhibit C-15 displays comparisons of appropriations per weighted credit hour during the ten-year time period FY 1992 to FY 2001. In FY 1992, State General and Endowment Funds appropriated per weighted student credit hour varied from $81 at BSU to $115 at UI, a variance of $34 per weighted student credit hour. In FY 2001, the

variance had increased to $39 per weighted student credit hour, varying from $104 at Boise State University to $143 at the University of Idaho. The variance from high to low had decreased moderately from 42.0 percent to 37.5 percent.

In FY 1992, student fees and miscellaneous revenues appropriated per weighted credit hour varied from $14 at Idaho State University to $20 at Lewis-Clark State College. Again, by FY 2001 the variance had increased from $30 per weighted credit hour at Idaho State University to $40 at Lewis-Clark but had decreased in percentage terms from 42.9 percent to 33.3 percent.

In FY 1992, total appropriations per weighted student credit hour varied from $96 at Boise State to $132 at the University of Idaho, a difference of $36 per credit hour or 37.5 percent. By 2001, the difference had grown to $42 per weighted student credit hour ($135 at BSU and $177 at University of Idaho) and decreased to 31.1 percent.

If funding were being allocated in a manner that would provide equity as measured by equal amounts per weighted student credit hour, then it would be expected that the total amounts appropriated per weighted student credit hour would be equal at each college or university. It would not be necessary for student fees or state general and endowment funds to be equal, because the allocation decision could consider the ability of the institution to generate revenues as one component of the equitable amount being distributed.

If funding were equitable in FY 1992, as measured by total appropriations per weighted student credit hour, for funding per weighted student credit hour to be considered equitable in FY 2001, then it would be expected that the same relative relationships would exist in FY 2001 as existed in FY 1992. The relationships did not stay the same. If this funding were to be considered equitable, there should not be more than a 10 percent difference between the high and the low institutions. This “standard”

is called the "Federal Disparity Measure" and is one of the measures used to determine equity of funding in education finance court cases.

C.2.b. Full-Time Equivalent Student Comparisons

Exhibit C-16 displays comparisons of appropriations per full-time equivalent student during the ten-year time period FY 1992 to FY 2001. Full-time equivalent student counts are derived from credit hour counts, and vary by level of the student. Full-time student counts represent another way of examining equity. Under a definition of horizontal equity (defined as the equal treatment of equals), it would be expected that there would be little variation among the institutions in appropriations per FTE student.

In FY 1992, State General and Endowment Funds appropriated per full-time equivalent student varied from $3,749 at LCSC to $6,722 at UI, a variance of $2,973 per student or 79.3 percent. In FY 2001, the variance had increased in dollar terms to $3,112 per full-time equivalent student or 54.3 percent, varying from $5,726 at Boise State University to $8,838 at the University of Idaho.

In FY 1992, student fees and miscellaneous revenues appropriated per full-time equivalent student varied from $745 at Idaho State University to $970 at the University of Idaho, a variance of $225 or 30.2 percent. Again, by FY 2001 the variance had increased to $358 or 21.1 percent, varying from $1,696 per full-time equivalent student at Idaho State to $2,054 at University of Idaho. These differences in tuition revenues may represent different proportions of non-resident students.

In FY 1992, total appropriations per full-time equivalent student varied from $4,540 at Lewis-Clark to $7,693 at the University of Idaho, a difference of $3,153 per student or 46.8 percent. By 2001, the difference had grown to $3,473 per full-time equivalent student or 46.8 percent ($7,419 at BSU and $10,892 at University of Idaho). The size of the variance suggests that funding is not equitable.

C.2.c. Full-Time Equivalent Academic Student Comparisons

Exhibit C-17 displays comparisons of appropriations per full-time equivalent academic student during the ten-year time period FY 1992 to FY 2001. Full-time academic students are defined to be full-time equivalent students who are enrolled in programs other than vocational programs. To be equitable, funding should not differ by more than 10 percent from high to low allocation per student.

In FY 1992, State General and Endowment Funds appropriated per full-time equivalent academic student varied from $4,485 at BSU to $6,722 at UI, a variance of $2,237 per student or 49.9 percent, a significant variance. In FY 2001, the variance had increased in dollar terms to $2,722 per full-time equivalent academic student, but had been reduced to 44.5 percent in percentage terms, varying from $6,116 at Boise State University to $8,838 at the University of Idaho.

In FY 1992, student fees and miscellaneous revenues appropriated per full-time academic equivalent student varied from $831 at Boise State University to $991 at Lewis-Clark State College, a difference of $160 or 19.3 percent. Again, by FY 2001 the variance had increased to $262 per student or 14.4 percent, from a low of $1,819 per full-time academic equivalent student at Boise State to a high of $2,081 at Lewis-Clark State College.

In FY 1992, total appropriations per full-time academic equivalent student varied from $5,315 at Boise State to $7,693 at the University of Idaho, a difference of $2,378 per student or 44.7 percent. By 2001, the difference had grown to $2,957 per full-time academic equivalent student or 37.3 percent ($7,935 at BSU and $10,892 at the University of Idaho).

In this case, the disparities increased, and allocations of state appropriations per full-time academic student were less equitable in FY 2001 than in FY 1992, from the perspective of increases in the dollar variance. From the percentage perspective,

funding per academic full-time equivalent student became marginally more equitable than in FY 1992. In any case, funding was not equitable.

C.2.d. Headcount Student Comparisons

Exhibit C-18 displays comparisons of appropriations per headcount student during the ten-year time period FY 1992 to FY 2001. The disparity was used to determine equity in the allocation under this measure, also.

In FY 1992, State General and Endowment Funds appropriated per headcount student varied from $2,770 at LCSC to $5,336 at UI, a variance of $2,566 or 92.6 percent per headcount student. In FY 2001, the variance had increased to $3,321 per headcount student, varying from $4,034 at Boise State University to $7,355 at the University of Idaho, a difference of 82.3 percent.

In FY 1992, student fees and miscellaneous revenues appropriated per headcount student varied from $544 at Boise State University to $770 at the University of Idaho, a variance of $226 per headcount student or 41.5 percent. Again, by FY 2001 the variance had increased to $510 per headcount student or 42.5 percent, varying from $1,200 per headcount student at Boise State to $1,710 at the University of Idaho. Again, this difference may represent variation in the ability of the institutions to raise revenues through tuition and fees.

In FY 1992, total appropriations per headcount student varied from $3,355 at Lewis-Clark State College to $6,106 at the University of Idaho, a difference of $2,751 per student or 82.0 percent. By 2001, the difference had grown to $3,831 per headcount student or 73.2 percent ($5,234 at BSU and $9,065 at the University of Idaho).

Using headcount students, the differences in appropriations among the four institutions suggest that funding is not equitable.

C.2.e. Summary of Findings Related to Idaho Data

Multiple assessments of equity were completed based on the allocation of resources per weighted credit hour, full-time equivalent students, full-time equivalent students enrolled in academic programs in the fall semester, and headcount students. Three calculations were completed for each measure of "need" as represented by student counts: State General Account Funds plus State Endowment Funds, Student Fees and Miscellaneous Revenue Funds, and Total Appropriated Funds.

None of these 12 measures of the allocation of resources found equity within the Idaho system. Use of the weighted credit hour was an attempt to measure vertical equity (the unequal treatment of unequals) while the other three student counts were attempts to gauge the existence of horizontal equity. The federal disparity standard used in education finance court cases was the standard against which variation in resources per weighted student credit hour was judged.

Although the variance on several of the measures decreased over time in percentage terms, the dollar variance increased on all 12 measures. The large variances on the 12 measurements of equity in the distribution of resources suggest that funding among the four institutions is not equitable.

C.3 Results of the Equity Determination

Based both on the analysis of peer data, and also on the analysis of Idaho-specific data, the allocation of resources to Boise State University, Idaho State University, Lewis-Clark State College, and the University of Idaho was determined to be inequitable. The challenge then was to move into Phase II, identify the reasons for the inequitable allocation, and develop recommendations that would result in a more equitable allocation of resources among the four senior Idaho institutions.

D. BEST PRACTICES IN FUNDING FORMULA USE IN HIGHER EDUCATION

D. BEST PRACTICES IN FUNDING FORMULA USE IN HIGHER EDUCATION

This section of the report provides information on allocation methods or funding formulas that have been used by systems or states for higher education funding. The chapter is organized into sections on the background or history of higher education funding formulas, development of funding mechanisms, economies of scale and scope, guiding principles, other states formulas (including best practices), and Idaho's allocation mechanism.

D.1 Introduction and Overview

State-level funding formulas or guidelines for public higher education have been in use in the United States for over 50 years.[1] Originally envisioned as a means to distribute public funds in a rational and equitable manner, funding formulas have continually evolved since then into often-complex methodologies for determining institutional funding needs and allocating public funds. Perhaps the only constant during this period has been the ongoing controversy among participants in the state budgeting process surrounding the design and usage of these funding mechanisms. Even though the genesis of funding formulas may lie in rational public policy formulation, the outcome may not. Formulas are products of political processes, which implies that formulas result from compromise and that what is acceptable in one political subdivision may not be acceptable in another.

Although the basic purpose of funding formulas remains the rational and equitable allocation of state funds for public higher education, guidelines are designed and utilized for many purposes including the following:

[1] The terms "funding formula" and "funding guideline" will be used interchangeably throughout this paper.

- by the state higher education agency or governing board as a means of recommending resources for each institution to the legislature and governor;
- by the legislative and executive budget offices as a means of evaluating higher education budget requests;
- by the governing or coordinating board and/or legislature as a means of measuring and rewarding productivity; and
- by the state higher education agency as a means to distribute the state's higher education budget allocation to each institution.

Development of an optimal or best formula is complex because there are differences in institutional missions, even within the same system, and in the capacities of institutions to perform their missions. These differences do not negate the value of formulas but suggest that formulas can be used to provide a fiscal base to which (or from which) funding can be added (or subtracted), if justified. Formulas typically are considered enrollment driven because they are based on credit hours, students, or faculty members, which makes it relatively easy to evaluate change. If additional funds are justified, then formulas can provide the basis to target supplemental funding. Because formulas may be enrollment driven, when enrollments are steady or decline, funding may decrease. This aspect of formula use brought formulas under attack in several states when institutions experienced declines in enrollment.

When enrollments decline or remain constant, methods are sought to provide additional resources. Development of new programs and services to meet the varied needs of a changing clientele may require different configurations of resources in addition to different programs. The use of alternative instructional delivery methods, including telecommunications delivery of instruction, may require a shift in the paradigm on funding.

To accomplish the purpose of providing an equitable distribution of available resources, a majority of states and systems have used funding formulas or guidelines in budget development or in resource allocation to higher education institutions. A formula

is defined as a mathematical representation of the amount of resources or expenditures for an institution as a whole or for a program at the institution. Programs in this context refer to the categories into which expenditures are placed, as defined by the National Association of College and University Business Officers (NACUBO). The "programs," "functional categories," or "budget areas" commonly used are the following:

Instruction	Institutional Support
Research	Operation and Maintenance of Physical Plant
Public Service	Scholarships and Fellowships
Academic Support	Auxiliary Enterprises
Student Services	Hospitals
Mandatory Transfers	

Many states or systems provide funding based on these functional or budget programs, with the exception of auxiliary enterprises, hospitals, and mandatory transfers. These three areas usually are not funded through state dollars, and hospitals and auxiliary enterprises are not included in Educational and General (E&G) expenditures, which result from the three basic missions of universities: instruction, research, and public service. Funding for the remaining categories may be based on formulas in the determination of the total resource allocation to the institution.

In most states and systems, however, total institutional needs are not determined by a formula mechanism. Additions are made to the amounts determined by formula to recognize special needs or special missions. Similarly, given political structures, competition for funds from other state agencies, and shortfalls in revenue projections, the amount determined by a formula calculation may be reduced to conform to total funds available.

The breadth and coverage of funding formula and guideline usage varies as well among the states. States may use formulas for all public higher education sectors (four- and two-year) or just a particular segment. Further, states may use formulas or guidelines for specific program areas such as instruction and academic support, or they may be all-inclusive. A trend over time has been to have more "non-formula" components in the higher education budget, given the feeling that formulas are not adequate for meeting the funding needs of certain specialized activities (e.g., co-located instruction, public service activities, cooperative extension).

D.1.a. Development of Funding Formulas

Funding formulas have been considered the offspring of necessity.[2] The development of an objective, systematic method of dealing with the funding of many diverse institutions prompted many states to begin using formulas.[3] Prior to 1946, institutions of higher education served a limited and relatively homogenous clientele. After World War II, enrollments increased dramatically and each state or system had a variety of liberal arts colleges, land-grant colleges, teacher training colleges, and technical schools to meet the needs of its citizens.

As the scope and mission of campuses increased and changed (i.e., teachers' colleges becoming regional universities), so did the complexity of distributing resources equitably among competing campuses. Because state resources did not keep pace with increasing enrollments, the competition for funding became greater. And, because no two campuses are alike, methods were sought to allocate available funds in an objective manner, to provide sufficient justification to the Legislature for additional resources, and to facilitate inter-institutional comparisons.

The desire for equity was a prime factor in the development of funding formulas, but other factors served as catalysts: the desire to determine an "adequate" level of

funding; institutional needs to gain stability and predictability in funding levels; and increased professionalism among college and university business officers.[4] The objective of equity in the distribution of state resources is to provide resources to each of the campuses according to its needs. To achieve an equitable distribution of funds required a distribution formula that recognized differences in size, clients, location, and the mission of the college.[5]

The concept of "adequacy" is more difficult to operationalize in the distribution of resources. What might be considered to be adequate for the basic operation of one campus would be considered inadequate for a campus offering similar programs but having a different client base.

Texas was the first state to use funding formulas for higher education. By 1950 California, Indiana, and Oklahoma also were using funding formulas or cost analysis procedures in the budgeting or resource allocation process.[6] In 1964 16 states were identified as using formulas; by 1973, the number had increased to 25 states, and to 33 by 1992.[7]

Formulas evolved over a long period of time and contributed to a series of compromises between institutions, governing or coordinating boards, and state budget officials. For example, institutions sought autonomy while governing or coordinating boards and budget officials sought adequate information to have control over resources. The development of the Texas formulas is an example of the trade-offs between accountability and autonomy.

When sudden enrollment increases in the late 1940s caused confusion in the amounts to be appropriated to Texas public colleges, each institution lobbied the legislature for additional funds. Texas legislators felt that the institutional requests were excessive and that the division of resources among institutions was inequitable. Consequently, the legislature asked for some rational mechanism to distribute funds. In

1951 a teaching salary formula based on workload factors was developed; this formula did not recognize differences among the campuses in roles and missions. By 1957 a series of budget formulas developed by institutional representatives, citizens, and the new Commission on Higher Education was presented to the legislature. These formulas were developed only after completion of a major study of the role and scope of the institutions. The study included an inventory of program offerings and attempted to measure costs by program. After 1958 a cost study committee was established that recommended adoption of five formulas for teaching salaries, general administration, library, building maintenance, and custodial services. In 1961 two formulas for organized research and departmental operating costs were added. By 1996 Texas used 13 separate formula calculations that were developed through complex cost studies of each of the program offerings on the campuses. Texas continues to use advisory committees to revise and improve its formulas to encompass two broad objectives: provide for an equitable distribution of funds among institutions and assist in determining the funding needed for a first-class system of higher education.[8] At each phase of Texas formula development, compromises were reached between the desire for additional data for increased accuracy and for differentiating among the institutions and the cost and burden of providing the data.

The trend in formula development in many states parallels the experience of Texas: refinement of procedures, greater detail and reliability in collection and analysis of information, and improvement in the differentiation between programs and activities. States have used different methods over time to develop their formulas for both four-year and two-year institutions. Some states have developed their methods from the "ground up". Many of these formulas have been based on the statistical analysis of institutional data (i.e., regression modeling) or the determination of an "average cost" among institutions in a state for providing a particular type of service. Others have been

based on staffing ratios and external determinations of "standard costs" or workload factors based on national norms. The key to the process seems to be the isolation or identification of variables or factors that are directly related to actual program costs. Isolation of variables that are detailed, reliable, not susceptible to manipulation by a campus, and sufficiently differentiated to recognize differences in institutional role and mission requires the collection of myriad amounts of data. Data must be collected and analyzed in a manner that does not raise questions of preferential treatment for any campus.

Other states have developed their formulas by borrowing existing formulas from other states. For example, Alabama adapted the formulas used by Texas to the particular circumstances of Alabama, and continues to modify the formulas to reflect circumstances specific to Alabama, and to incorporate judicial interventions. Adaptation rather than development of a new formula appears to be the preferred method because of the time and effort required to complete a sound cost study. Accounting procedures are not refined enough in some states or systems to permit the calculation of costs differentiated by academic discipline and level of student, and to separate professorial time into the multiple work products generated by carrying out the three main missions of most institutions of higher education: teaching, research, and service. States continue to adapt formulas from other states because methods that work in one state may work equally well in another at considerable savings of time and resources.

States or systems use funding formulas for a variety of reasons, including the following:

- Formulas provide an objective method to determine institutional needs equitably.
- Formulas reduce political competition and lobbying by the institutions.

- Formulas provide state officials with a reasonably simple and understandable basis for measuring expenditures and revenue needs of campuses and determining the adequacy of support.
- Formulas enable institutions to project needs on a timely basis.
- Formulas represent a reasonable compromise between public accountability and institutional autonomy.
- Formulas ease comparisons between institutions.
- Formulas permit policy makers to focus on basic policy questions.

Funding formulas also can provide for equity among institutions, depending on how the formulas are constructed. Two types of equity are achieved through formula use: horizontal and vertical. Horizontal equity is defined as the equal treatment of equals, and vertical equity is defined as the unequal treatment of unequals. An example of a horizontal equity element is a formula that provides a fixed dollar amount for one credit hour of lower division English instruction, no matter where or how the class is taught. Texas and Alabama use this element in their instruction funding formulas. An example of a vertical equity element in a formula is the allowance of $2.80 per gross square foot (GSF) of space for maintenance of a brick building, but $3.20 per GSF for maintenance of a frame building.

However, formulas do have shortcomings, and there have been many heated debates over whether the advantages of formulas outweigh the downside of use. Some disadvantages of funding formulas are the following:

- Formulas may be used to reduce all academic programs to a common level of mediocrity by funding each one the same because quantitative measures cannot assess the quality of a program.
- Formulas may reduce incentives for institutions to seek outside funding.
- Formulas may perpetuate inequities in funding that existed before the advent of the formula.
- Enrollment-driven formulas may be inadequate to meet the needs of changing client bases or new program initiatives.
- Formulas cannot serve as substitutes for public policy decisions.

- Formulas are only as accurate as the data on which the formula is based.
- Formulas may not provide adequate differentiation among institutions.
- Formulas are linear in nature and may not account for sudden shifts in enrollments and costs.

In any event, guidelines or formulas reflect one of two computational approaches: the all-inclusive approach, where the total allocation for a program area such as Instruction or Academic Support is determined by one calculation; and the itemized approach, where more than one calculation or formula is used in each budget area. Most state funding formulas use the itemized approach.

Three computational methods have been identified under which every formula calculation can be classified:

- Rate per base factor unit (RPBF).
- Percentage of base factor (PBF).
- Base factor/position ratio with salary rates (BF-PR/SR).

The rate per base factor method starts with an estimate of a given base, such as credit hours or full time equivalent students (FTES), and then multiplies the base by a specific unit rate. Unit rates generally have been determined by cost studies and can be differentiated by discipline, level, and type of institution.

The PBF method assumes there is a specific relationship between a certain base factor like faculty salaries and other areas like departmental support services. The PBF method can be differentiated by applying a varying percentage to levels of instruction or type of institution, but this is unusual. Reportedly, the PBF was developed because of the perception that all support services are related to the university's primary mission (instruction).[9]

The BF-PR/SR method is based on a predetermined "optimal" ratio between a base factor and the number of personnel. For example, ratios such as students per

faculty member or credit hours per faculty member are used. The resulting number of faculty positions determined at each salary level is then multiplied by the applicable salary rate for that level and the amounts summed to get a total budget requirement. The BF-PR/SR method also is used commonly in plant maintenance, and is the most complex of the computational methods.

The base factors used in most formulas can be classified into five categories:

- Head count.
- Number of positions.
- Square footage or acreage.
- FTE students or staff.
- Credit hours.

Square footage or acreage is used most often in the operation and maintenance of plant, whereas credit hours, FTE students or staff, or positions are the most prevalent bases in the instruction, academic support, and institutional support areas. Head count is used as the base unit most often in student services and the scholarships and fellowships area.

States have also found it necessary to introduce factors that differentiate among institutions in funding formulas because each institution, if examined closely enough, has a different mission and mix of program offerings. Differentiation is used to recognize that there are legitimate reasons for costs to vary; reasons include economies and diseconomies of scale, method of instruction, and class size. Differentiation became more prevalent and more complex as accounting and costing methods improved and reliable cost data became available.

Differentiation is especially commonplace in formulas used to calculate funding requirements for the instruction program area. All of the states using formulas for

instruction attempt to differentiate by discipline, institutional type, or level of enrollment. Only a few formulas in other budget areas differentiate by these three types of factors.

Formulas may differentiate among academic disciplines (such as education, sciences, and architecture), levels of enrollment (freshman and sophomore {called lower division}, junior and senior {called upper division}, masters, and doctoral), and types of institutions (community colleges, baccalaureate institutions, and research universities). Recently, some states (e.g., Alabama) have also introduced differentiation for historically black institutions as an institutional type.

D.1.b. Economies of Scale and Scope

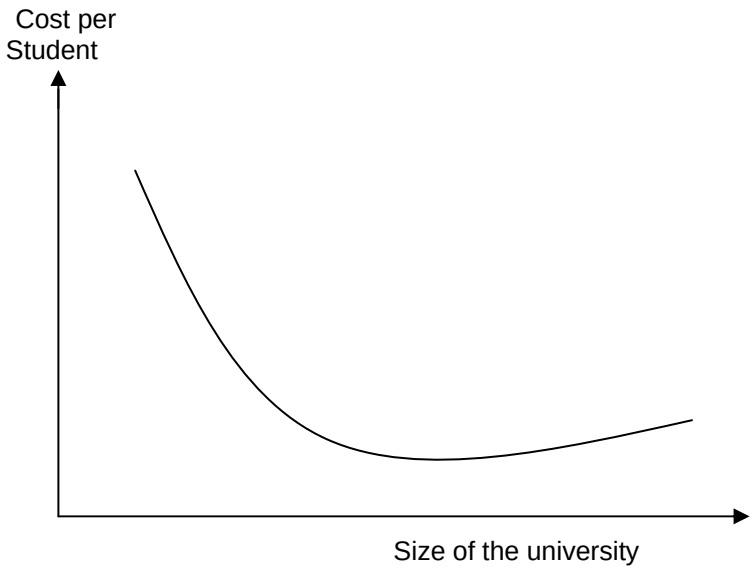
Formulas also may include factors that consider the size and complexity of the institution so that economies and diseconomies of scale and scope may be recognized. Some higher education institutions long have contended that their small size makes it impossible to take advantage of factors that would reduce unit costs; or conversely, that the institution's large size introduces diseconomies that make unit costs higher. Similarly, institutions have argued that narrowness of offerings, i.e., being a liberal arts college only, results in a reduction of unit costs (because of factors such as less departmental overhead since there are fewer academic departments); while diversity of program offerings, addition of master's and doctoral programs, and diversity of mission cause additional costs, or diseconomies of scope. The economics literature and research provide evidence that not only economies and diseconomies of scale but also economies and diseconomies of scope exist in higher education.

One of the basic principles of economics is that the size or scale of operation is likely to effect the cost of one unit of production. In higher education, an increase in the size of the institution may result in reductions in unit costs, or cost of a full-time equivalent student; this phenomenon is called an *economy of scale*. Similarly, if

increases in institutional size result in increases in unit costs or the cost of a full-time equivalent student, the phenomenon is called a *diseconomy of scale*. Formulas may recognize these differences by providing a fixed cost factor such as a minimum guaranteed funding base to ensure that smaller institutions have the necessary resources to offer a basic level of services; or by providing differential amounts for more complex institutions.

A typical relationship between size and cost is shown in Exhibit D-1. As institutional size increases, factors that appear to decrease unit cost tend to predominate until a point is reached when factors raising unit costs tend to be predominant. The result is a u-shaped curve where the minimal point on the curve represents the lowest unit cost. In higher education, this lowest point may actually be a range over which the factors that keep costs down and those that drive costs up are in balance.

EXHIBIT D-1
HYPOTHETICAL COST CURVE BETWEEN SIZE OF UNIVERSITIES AND COST PER STUDENT



Bowen[10] notes that the primary factors that drive the costs of higher education down is what he calls the "lumpiness" of many of the resources used. For a college or university to operate at all, it must have some faculty, a few administrative officers, some buildings and grounds, books, and equipment whether the college enrolls five students or 5,000. These costs to operate an institution or program no matter how many students are involved are called "fixed costs." The cost per student for these initial overhead items or fixed costs decreases as the number of students increases, until a point is reached when the staff and facilities are fully employed and an additional student would require additional resources. The costs that are added for additional students or additional outputs are called "variable costs." "Marginal costs" are defined as those costs associated with the recent addition or deletion of students from a program; the terms "variable" and "marginal" costs are sometimes used interchangeably.

As the institution expands further, more resources would be added in the lumpy fashion, with costs continuing to be spread over additional students, and unit costs again would fall. Large enrollments also increase average class size, resulting in further economies of scale because instructors' salaries remain the same, but are spread over more students. Bowen also notes that the "lumpiness" of resources gives rise to three different types of diseconomies of scale. One of these diseconomies is the rising cost of institutional coordination of larger and more academic units within the university. While Bowen calls this a diseconomy of scale, other economists label this phenomenon a "*diseconomy of scope*.[11] Economies of scope are defined by Cohn et al as "complementarity between outputs that results in lower per-unit costs when two more outputs are produced simultaneously."[12] In other words, economies of scope occur when a university produces credit hours at multiple levels and it is cheaper to produce those credit hours at the undergraduate and graduate level together than to produce those credit hours in separate departments. Or economies of scope occur when a

university produces multiple products with no increase in cost, as occurs when professors teach and also produce research and public service.

A second diseconomy of scale noted by Bowen is the possible deterioration in quality as the size of the university increases. He calls a deterioration in quality an increase in unit cost because the value of the service decreases. The third diseconomy of scale occurs, according to Bowen, when increasing size results in additional recruitment expenditures and student financial aid, thus increasing unit costs.

Bowen was not the first economist to study economies and diseconomies of scale in higher education. Early studies were completed in the 1920s, but the first studies of note were completed in the 1960s, all showing that certain economies of scale did exist for colleges and universities.[13] In 1972, the Carnegie Commission on Higher Education determined that there was a definite relationship between size of an institution and cost per student. For public comprehensive institutions, cost reductions occurred at the breaking point between 1,000 and 1,300 full-time equivalent students and among research and doctoral granting universities between 5,000 and 5,500 students.[14] Earlier work by the Commission had resulted in these recommendations for optimal college/university size:

	Minimum	Maximum
Doctoral universities	5,000	20,000
Comprehensive universities	5,000	10,000
Liberal arts colleges	1,000	2,500[15]

In his seminal work on university costs, Bowen concluded the following:

- Large institutions spend a substantially smaller percentage of their educational expenditures for institutional support and student services than do small institutions.
- Most large institutions spend relatively less per student for plant operation and maintenance than do small institutions.

- Large institutions spend a greater percentage of their resources for teaching than do comparable small institutions.
- Size appears to have no consistent effect on the percentages spent for scholarships and fellowships and for academic support. However, large institutions spend relatively less on libraries than do small institutions.[16]

Bowen concluded that economies of scale appear to be most pronounced for institutional support, student services, and plant, resulting in large institutions being able to devote a larger share of their resources to instruction. As a result, larger institutions were able to pay higher average faculty salaries than smaller institutions could. Similarly, large institutions had less building space per student than smaller institutions and also employed relatively more "other staff" than small institutions.

Paul Brinkman and Larry Leslie completed a meta-analysis on 60 years of research on economies of scale in higher education.[17] The literature in the review included books, dissertations, reports, and journals dating from the 1920s. For four-year institutions, their review of the studies found the following:

- Large economies of scale are found in expenditures for administration and operation and maintenance of plant.
- Total educational and general costs per student decrease as size increases.
- Substantive size-related economies of scale are most likely to occur at the low end of the enrollment range.
- Instructional expenditures have the least reductions in unit costs related to size.
- Evidence was inconclusive on whether large universities experience diseconomies of scale.
- The extent to which a set of institutions (like the Idaho institutions) experience economies or diseconomies of scale depends on the scope and variety of programs and services offered (i.e., economies and diseconomies of scope), salaries paid, and how resources are used on the campus.
- Institutions with between 1,000 and 2,000 FTE students can experience adverse economies of scale.

In contrast to the meta-analytical results, Broomall et al. examined economies of scale for Virginia institutions using regression analysis and concluded that economies of scale are not a function of the type and size of a university. Moreover, no economies or diseconomies of scale or scope appeared as complexity or size of the institution increased.[18]

Koshal and Koshal examined economies of scale and scope in higher education and concluded the following:

- The marginal cost of graduate education is greater than that of undergraduate education.
- Ray economies of scale (the expansion of all outputs) exist for comprehensive universities. This means that increases in the size of graduate and undergraduate programs and in research and public service programs result in reduced marginal costs.
- Product specific economies of scale for undergraduate and graduate education do exist at all levels of output.
- Global economies of scope (due to complementarity among outputs like research and instruction) exist for all public institutions. For undergraduate and graduate instruction, both product-specific economies and diseconomies of scope exist.
- Comprehensive universities can reap benefits from both economies of scale and of scope. Large comprehensive universities are the more cost-efficient institutions.[19]

Dundar and Lewis examined economies of scale and scope at public universities and concluded that average and marginal costs were highest for research outputs and lowest for undergraduate education. Social sciences have the lowest costs; contrary to conventional wisdom that costs of instruction increase by level, this was not found for all fields, and master's education in the social sciences is more costly than doctoral education. They concluded that the design of funding and tuition policies for universities should consider the joint costs of research and public service and the economies of scope possible with joint production. Most importantly, Dundar and Lewis concluded

that economies of scale and scope exist at departmental levels, and differ by discipline but not within the social sciences. [20]

In what has been called "an important advance" [21] in the study of economies of scale and scope in higher education, Cohn, Rhine, and Santos examined three types of economies: ray economies (due to the expansion of all outputs), product-specific economies of scale, and economies of scope. They concluded that there were product-specific economies of scale for undergraduate and graduate enrollment and for sponsored research funding. For institutions engaging in only relatively small amounts of research, like the Idaho institutions, they found ray economies of scale up to only 5,000 students while institutions with large amounts of research had ray scale economies up to 25,000 students. There also were significant economies of scope among all outputs, but especially for instruction and research. This means that the cost of producing research and instruction together is cheaper than the costs of producing them separately. Cohn et al concluded that the most efficient institutions are major public research universities that have both large enrollments and substantial research enterprises.[22]

Lastly, Brinkman summarized the available information related to costs at comprehensive universities. [23] Studies upon which he reported concluded that total expenditures per student at institutions with 12,000 full-time equivalent students could be expected to be 22 percent lower than cost per student at an institution of 4,000 students. For master's-oriented institutions, economies of scale appear to be maximized at 3,000 to 4,000 students, and that minimum average costs are reached at 5,000 students. Brinkman also reported that direct costs per credit hour for doctoral instruction were, on average, 8 to 9 times as much as lower division undergraduate costs per credit hour; master's level 4 to 5 times as much; and upper division 1.6 to 1.8 times as much. He

concluded that factors associated with changes in marginal and average costs were size of institution, scope of services offered, level of instruction or student, and discipline.

D.2 Guiding Principles in Formula/Guideline Usage

Over time, a number of researchers in the area of higher education finance have offered their concepts regarding desired characteristics in state higher education funding formulas. Frequently, what is offered as the "desired characteristic" is in direct response to a perceived shortcoming of a particular state's funding formula or guideline.

Fourteen characteristics, listed and summarized in Exhibit D-2 in no particular order of importance from A to N, often tend to be in opposition to one another. For instance, the desire to have a simple-to-understand funding formula may preclude features that might contribute to a greater degree of equity (e.g., more detailed sub-categories to reflect institutional differences). Similarly, a formula that is responsive to changes in enrollment levels may not be able at the same time to provide the desired level of stability. Use of the characteristics provides an objective framework for evaluating funding policy alternatives – both during the phase of review of the current allocation mechanism and in subsequent years. There will be many alternatives and options for funding mechanisms – an accepted, pre-established set of guiding principles provides a rationale for narrowing down this list of options.

The Technical Oversight Committee for this project agreed to use the following set of guiding principles. In a following component of this study, the characteristics or criteria will be used to evaluate the current allocation mechanism.

EXHIBIT D-2
DESIRED CHARACTERISTICS OF AN ALLOCATION OR FUNDING FORMULA

Characteristic	*Summary Description*
A. Equitable	The funding formula should provide both horizontal equity (equal treatment of equals) and vertical equity (unequal treatment of unequals) based on size, mission and growth characteristics of the institutions.
B. Adequacy-Driven	The funding formula should determine the funding level needed by each institution to fulfill its approved mission.
C. Goal-Based	The funding formula should incorporate and reinforce the broad goals of the state for its system of colleges and universities as expressed through approved missions, quality expectations and performance standards.
D. Mission-Sensitive	The funding formula should be based on the recognition that different institutional missions (including differences in degree levels, program offerings, student readiness for college success and geographic location) require different rates of funding.
E. Size-Sensitive	The funding formula should reflect the impact that relative levels of student enrollment have on funding requirements, including economies of scale.
F. Responsive	The funding formula should reflect changes in institutional workloads and missions as well as changing external conditions in measuring the need for resources.
G. Adaptable to Economic Conditions	The funding formula should have the capacity to apply under a variety of economic situations, such as when the state appropriations for higher education are increasing, stable or decreasing.
H. Concerned with Stability	The funding formula should not permit shifts in funding levels to occur more quickly than institutional managers can reasonably be expected to respond.
I. Simple to Understand	The funding formula should effectively communicate to key participants in the state budget process how changes in institutional characteristics and performance and modifications in budget policies will affect funding levels.
J. Adaptable to Special Situations	The funding formula should include provisions for supplemental state funding for unique activities that represent significant financial commitments and that are not common across the institutions.
K. Reliant on Valid & Reliable Data	The funding formula should rely on data that are appropriate for measuring differences in funding requirements and that can be verified by third parties when necessary.
L. Flexible	The funding formula should be used to estimate funding requirements in broad categories; it is not intended for use in creating budget control categories.
M. Incentive-Based	The funding formula should provide incentives for institutional effectiveness and efficiency and should not provide any inappropriate incentives for institutional behavior.
N. Balanced	The funding formula should achieve a reasonable balance among the sometimes competing requirements of each of the criteria listed above.

D.3 Other States' or Systems' Funding Formulas

In 1999, 27 states or systems reported that they were using funding formulas and guidelines in the budget or resource allocation process for public four-year institutions, down from the 30 states or systems reporting formula use in 1996. Twenty states indicated that they were in the process of revising current formulas or adopting new formulas. The number of states or systems employing formulas changes from year to year, since states continually adopt, modify, and drop formulas and since what one person may consider a formula may be called by another name by another person. For example, Louisiana typically is identified as a formula state although the person responding to the survey used to collect these data indicated Louisiana was not using formulas in 1999. States identified as using funding formulas, peers, or performance indicators in 1996 are listed in Exhibit D-3.

Although all of the southern states except North Carolina have used funding formulas throughout the past twenty years, and have been leaders in formula development and innovation, that picture changed during the last half of the 1990s. Delaware, Kentucky, Mississippi, and Virginia dropped the use of formulas in the resource allocation or budgeting process. Instead, these states focused budget requests and the allocation process on inflationary increases and special initiatives as Idaho has done periodically over the past eleven years. Most of the other southern states modified their formulas since 1992, and the University of North Carolina System now uses formulas to determine increases or decreases in institutional funding requests based on changes in enrollment. Virginia currently is in the process of developing a new funding formula that will have performance components. Idaho has tied certain teacher education funding allocations and Governor's initiatives on economic development to performance measures.

EXHIBIT D-3
STATES/SYSTEMS USING FORMULAS, PEERS, AND PERFORMANCE INDICATORS IN 1988, 1992, AND 1996

	Using Funding Formulas			Using Peers			Using Performance Indicators		
STATE	**1984**	**1992**	**1996**	**1984**	**1992**	**1996**	**1984**	**1992**	**1996**
Alabama	X	X	X		X	X			
Alaska		X							
Arizona	X	X	X		X	X			X
Arkansas	X	X			X	X			X
California	X	X	X		X	X			
Colorado	X	X	X						
Connecticut	X	X	X			X	X		X
Delaware									
Florida	X	X	X		X	X	X		X
Georgia	X	X	X			X	X		
Hawaii						X			
Idaho		X	X			X	X		
Illinois	X	X	X	X	X	X			X
Indiana					X	X			
Iowa					X	X			
Kansas	X	X	X		X	X			
Kentucky	X	X	X	X	X	X	X	X	
Louisiana	X	X	X		X	X	X		
Maine						X			X
Maryland	X	X	X				X		
Massachusetts	X							X	
Michigan	X								
Minnesota	X	X	X				X		X
Mississippi	X	X	X		X	X		X	X
Missouri	X	X	X		X		X	X	X
Montana	X	X	X		X	X			
Nebraska					X	X			
Nevada	X	X	X			X	X		
New Hampshire									
New Jersey	X						X	X	
New Mexico	X	X	X			X			
New York	X								
North Carolina					X	X		X	
North Dakota	X	X	X		X	X		X	
Ohio	X	X	X				X	X	X
Oklahoma	X	X	X		X	X			
Oregon	X	X	X		X	X			
Pennsylvania	X		X						
Rhode Island					X	X			X
South Carolina	X	X	X		X	X			
South Dakota	X	X	X						
Tennessee	X	X	X		X	X	X	X	X
Texas	X	X	X		X	X			
Vermont						X			X
Utah		X	X		X	X			
Virginia	X	X			X	X	X	X	X
Washington	X			X	X	X	X		
West Virginia	X	X	X		X	X			
Wisconsin	X				X	X			
Wyoming					X	X			
NUMBER	36	32	30	3	28	36	15	10	14

Among the states there is some variety in the type and number of formulas and in the functional or budget areas for which formulas are used. Of the states using formulas in 1996, 22 had only one formula for instruction, while Oregon had four, one for each "cost area" related to instruction. The majority of states applied formulas to all institutions but differentiate among institutional types. Texas used 13 formulas to compute budget requirements for total educational and general expenditures. In thirteen of the states, more than one computational formula is used to determine academic support needs. Since most states that use formulas or guidelines have a separate method for determining library needs, the academic support area (which includes libraries, academic computing support, and academic administration) usually will have expenditure needs computed by more than one formula. Academic support is an area for which the itemized approach generally has been used. Exhibit D-4 provides information on the numbers of formulas used by states/systems in 1996, by functional area.

D.3.a. Funding Formulas for Two-Year Colleges

In many states, two-year colleges originally were governed under the auspices of state departments of education and/or local school boards. Because of this governance structure, early funding formulas for two-year colleges were patterned off elementary and secondary education funding formulas. Funding generally was calculated at a dollar amount per student, with both the state and the local district contributing to total funding. The level of local funding was based on the district's ability to support the college, which generally was calculated based on an equalization formula using taxable property wealth per full-time equivalent student. Use of ability-to-pay formulas is one method of distributing funds equitably across college districts within a state. Ability-to-pay is similar

to the subtraction of different revenue amounts from the "needs" of four-year institutions based on the amount of revenues that the institution can generate.

When governance for two-year colleges was transferred from the local school district board (and the state board of education) to a board for the college (and either a statewide two-year college board or other state higher education board), most funding formulas migrated away from the "ability to pay" formulas used for elementary/secondary education. Several states (Montana, West Virginia) now incorporate funding for two-year colleges within the funding formulas used for all higher education by differentiating by type of institution. Other states (e.g. Texas, Alabama, Arizona) have separate funding formulas for two-year colleges, while some states (e.g., Wyoming) use funding formulas for two-year colleges but not for the four-year segment. The Illinois community college formula continues to use the ability of the local community college district to support the college (as measured by local property wealth) as a formula component. Other states include equity factors in their formulas by recognizing variations in the cost of offering different types of educational programs and services (like South Carolina does) and by recognizing economies of scale (e.g., Arizona, North Carolina).

Idaho would be considered to have separate funding or allocation mechanisms for two-year colleges through its professional/technical education components. All of the Idaho four-year institutions except the University of Idaho receive some of their funding through a separate two-year/technical allocation methodology. This separate mechanism complicates any evaluation of the equity of funding among the four universities and state college.

Several states determine the adequacy of their two-year college funding formula by comparing funding to regional averages or to institutional peer groups. Alabama, Kentucky, and South Carolina compare funding for two-year colleges to the SREB regional average funding for each type of college, as defined in the SREB Data

Exchange. Ohio and Oklahoma use national peer group averages to determine the adequacy of institutional funding levels.

EXHIBIT D-4
NUMBER OF FORMULAS USED BY STATES/SYSTEMS
IN 1996, BY FUNCTIONAL AREA

State	Instruction	Research	Public Service	Academic Support	Student Services	Inst. Support	Scholar. & Fellowships	Plant Operations
Alabama	1	1	1	2	1	1		1
Arizona	*			*	*	*		*
California	*	*	*	*		*		*
Colorado#								
Connecticut	1			3				5
Florida	2	*	*	3	1	1		3
Georgia	1	*		1	*	*		1
Idaho	*							
Illinois	*							
Kansas	*	*	*	*	*	*		*
Kentucky	1	1	1	5	1	1	1	1
Louisiana	*	*		*	*	*		*
Maryland	1	1	1	2	1	1	1	3
Minnesota	*			*	*	*		*
Mississippi	2	1	1	2	1	1	1	1
Missouri	1			2	1	1		1
Montana	2	*	*	*	*	*	1	
Nevada	2			2	1	1		2
New Mexico	1			1	1	1		1
North Dakota	1			2	*	*		2
Ohio	*			*	*	*		1
Oklahoma	*	*	*	*	*	*	*	*
Oregon	4	1		6	1	3		5
Pennsylvania	*	*	*	**	**	**		1
South Carolina	1	1	1	2	1	1		5
South Dakota	1	*		*	*	*		
Tennessee	1		1	2	1	1		1
Texas	2	1		2	2	1		5
Utah	*			*	*	*		*
West Virginia	*	1		*	*	*		*

* or ** indicates more than one functional area combined in one formula.
# Colorado distributes by formula funding for productivity, enrollment increases, and adult literacy. These formulas do not correspond to functional area analysis.

D.3.b. Formulas by NACUBO Classification, including "Best Practices"

Practices in guideline or formula use vary significantly among the states/systems. Formula usage and identification of "best practices" in each area are described below for each of the areas.

D.3.b.1. Instruction

This category includes all expenditures for credit and non-credit courses; for academic, vocational, technical, and remedial instruction; and for regular, special, and extension sessions. Excluded are expenditures for academic administration when the primary assignment is administration (such as deans). Instruction is the most complex, and most expensive, component of an institution's expenditures. Because of its importance, identification of appropriate cost factors is critical to the validity of the guideline development process.

Since the instruction program is typically the major component of expenditures at institutions of higher education, formulas for this activity are often quite complex. Each of the states using formulas explicitly or implicitly utilizes at least one formula for instruction. States provide differential funding for activities within the instruction program to recognize differences in costs by level of instruction, among academic disciplines, and among institutional roles and missions. Over time, formulas for instruction have become more complex in part because improvements in cost accounting procedures have resulted in more accurate data.

States use both the all-inclusive approach and the itemized approach in the instruction area, but the majority use the itemized. Explicitly, states have attempted to distribute in an equitable manner state funds for the instructional operations of public institutions within the state by recognizing the equality of class credit hours by discipline and level and the differences in institutional roles and missions. Since the formula allocations provide varying amounts based on enrollments by level and discipline, each institution in the state may receive differing amounts for instruction and different amounts per student from the formulas. Some of the states/systems such as Pennsylvania recognize economies of scale in the Instruction formula by using fixed and variable costs. Appendix B includes Exhibit B-1 that provides information on the computational

methodology, base factors, differentiation, and economies of scale factors in instruction formulas used by states or systems.

Examples of two formulas for instruction follow. Student/faculty ratios by level by discipline vary in the first sample formula, while the rate varies by level in the second.

1. *Instruction funding = the sum of (the number of faculty positions per discipline times the average faculty salary for that discipline),*
   where the number of faculty positions is determined by student/faculty ratios and the number of FTE students is determined by credit hours by level.

2. *Instruction funding = Base amount plus the sum of [(a rate times the number of weighted credit hours in Discipline Group 1) , (rate times the number of weighted credit hours in Discipline Group 2), (rate times the number of weighted credit hours in Discipline Group 3) and (rate times the number of weighted credit hours in Discipline Group 4)]*
   where the number of weighted credit hours is the rolling three-year average credit hours, and all academic disciplines are assigned to one of four discipline groupings based on cost factors. A discipline may be in Discipline Group 1 for undergraduate instruction, and in Discipline Group 2 or 3 for Master's or Doctoral instruction.

Each state that uses a formula for instruction utilizes a unique methodology. In fact, no two states rely on the same parameters for determining funding needs for their institutions of higher education.

A common problem faced by those states with large numbers of instructional cost categories in their funding formulas is the need to monitor the appropriateness of the classification of student credit hours by program or discipline. Formulas with too many program levels can create a temptation for institutions to assign their credit hour production to those program categories with the highest rate of reimbursement. The need to audit the correct reporting of student credit hour production exists in any enrollment-driven funding formula. However the problem grows exponentially with the level of differentiation.

In general, too much differentiation within the instructional component creates incentives for "gaming" the formula and leads to extra administrative expense in auditing enrollment reports and projecting future enrollment levels. For these and related

reasons, some states (e.g., Florida and Georgia) have refined their formulas in recent years to rely on a smaller number of cost categories in their instructional formula. Other states also are evaluating the use of simpler formulas.

D.3.b.2. Research

This category includes expenditures for activities designed to produce research outcomes. Explicitly, or implicitly by inclusion with at least one other functional area, 17 states have a formula that provides funds for the research budget area. Information on the formulas may be found in Exhibit B-2 in Appendix B.

Florida's formula is complex and involves computations related to the magnitude of research activities at each institution. The number of research positions is calculated based on a ratio by specific department and is then multiplied by a specified salary rate. Kentucky used a formula that calculated a level of support that recognizes differing roles and missions in research among institutions. Because different systems have differing goals, there are no generic "best practice" research formulas. Two sample research formulas follow.

1. *Research amount = 1% of outside funding for research.*
2. *Research amount = 2% of the sum of the formula amounts for instruction and academic support plus 5% of sponsored research*

D.3.b.3. Public Service

This category includes funds expended for activities that primarily provide non-instructional services to individuals and groups external to the institution. Alabama, Kentucky, Maryland, Tennessee, and South Carolina were the only states who reported using an explicit formula approach for the funding of public service activities in 1996. In Florida, public service positions were generated based on ratios specific to disciplines and then multiplied by a salary amount per position. South Carolina provided 25 percent of prior year sponsored and non-general fund public service expenditures; Alabama's

funding formula was 2 percent of the combined allocations for instruction and academic support. Information on public service formulas may be found in Exhibit B-3 in the Appendix and sample public service formulas are shown below.

1. *Public service amount = 2% of the sum of instruction and academic support*
2. *Public service amount = $75,000 + 1% of instruction, or $150,750 whichever is greater*

D.3.b.4. Academic Support

The category academic support includes funds expended to provide support services for the institution's primary missions of instruction, research, and public service. The area includes expenditures for libraries, museums, and galleries; demonstration schools; media and technology, including computing support; academic administration including deans; and separately budgeted course and curriculum development. However, costs associated with the office of the chief academic officer of the campus are included in the institutional support category.

To fund the library component of the academic support category in 1996, Alabama, Connecticut, Florida, Georgia, Kentucky, Maryland, Mississippi, Missouri, Nevada, Oregon, South Carolina, Tennessee, and Texas had at least one formula. Texas allocated an amount per credit hour differentiated by level of instruction.

Standards on the size of library collections, number of support personnel, and other factors have been developed by the American Library Association (ALA) and the Association of College Research Libraries (ACRL). Formulas to apply these standards, like the Voight formula and the Clapp-Jordan formula, have been developed so that institutions may determine if their library holdings meet the minimum requirements established by professional librarians. Only three states used a library formula that would permit meeting the ACRL criteria.

However, no formula or standard currently in use accounts for the changes in resource requirements necessitated by increasing use of technology. In fact, the ALA and ACRL standards on size of collection do not consider the use of the "virtual library" where the text of some "books" may be accessed electronically via the Internet. These technological changes in media availability certainly will have profound impacts on library resource needs, but such changes have not yet been reflected in funding formulas. In fact, such changes could actually make the distinction between "libraries" and "academic computing" currently found on most campuses irrelevant in the future. As such, the practice of having separate formulas for libraries could become outdated. An example of a simple and a more complicated academic support formula is shown below.

1. *Academic support funding = 5% of instruction formula calculation*
2. *Academic support funding = $750,000 + 15% of instruction formula calculation + $10 per undergraduate credit hour over 50,000 credit hours + $20 per masters credit hour + $80 per doctoral credit hour + $5 per continuing education hour*

In 1996, Florida, Kentucky, Missouri, South Carolina, and Texas each had at least one formula for other components of the academic support category. South Carolina calculated an amount based on the average expenditure per student by type of institution. Data from the most recent IPEDS surveys were updated using the Higher Education Price Index (HEPI) to arrive at the amount per student. Information on academic support formulas used by states/systems may be found as Exhibit B-4 in the Appendix B.

D.3.b.5. Student Services

This expenditure category includes funds expended to contribute to a student's emotional and physical well being and intellectual, social and cultural development outside of the formal instruction process. This category includes expenditures for student activities, student organizations, counseling, the registrar's and admissions

offices, and student financial aid administration. Information on the student services formulas used by other states/systems may be found in Exhibit B-5 in Appendix B.

The student services formulas used by Alabama, Kentucky, and Texas provide a different amount per head count or FTE student. As the size of the institution increases, the rate per student decreases to recognize economies of scale. The formula implicitly does this by adding an amount per weighted credit hour to a base. Such a calculation inherently recognizes economies of scale. South Carolina currently uses a flat amount per student, determined as the average IPEDS expenditure, updated by the HEPI. No economy of scale factor is included. Two sample student services formulas follow, both including consideration of economy of scale.

1. *Student services funding = $395 per student for the first 4,000 headcount + $295 per student for the next 4,000 headcount + $265 per student for all students over 8,000 headcount.*

2. *Student services funding = Base funding of $2,345,585 up to 4,000 headcount + $282 per student from 4,001 to 8,000 headcount + $255 per student over 8,000.*

D.3.b.6. Institutional Support

This category includes expenditures for the central executive level management of a campus, fiscal operations, administrative data processing, employee personnel services, and support services. Information on institutional support formulas may be found in Exhibit B in Appendix B.

In 1996, Alabama, Mississippi, South Carolina, and Tennessee multiplied a specified percentage by all other E&G expenditures to calculate institutional support needs. Kentucky included some differentiation and a base amount to recognize economies of scale and complexity of operation, and Texas multiplied a specified rate by a measure of enrollment to determine institutional support amounts.

Most institutional support formulas recognized fixed and variable costs by including a base amount and a specified amount per student or percent of base. Examples of "best practices" institutional support formulas are shown below.

1. *Institutional support = base amount + 15% of total E&G budget (excluding institutional support)*

2. *Institutional support = 11% of total E & G formula amount (excluding institutional support) for institutions with more than 8,000 headcount students or 15% of total E & G formula amount (excluding institutional support) for institutions with less than 8,000 headcount students.*

D.3.b.7. Operation and Maintenance of Physical Plant

This category includes all expenditures for current operations and maintenance of the physical plant, including building maintenance, custodial services, utilities, landscape and grounds, and building repairs. Not included are expenditures made from Plant Fund accounts (for items such as building construction and major renovation, purchase of lands, etc.), or expenditures for operations and maintenance of the physical plant component of hospitals, auxiliary enterprises, or independent operations. Information on the physical plant formulas used by other states/systems may be found in Exhibit B-7 in Appendix B.

Because the physical facilities of colleges and universities are quite complex, and each is unique, funding formulas for the operation and maintenance of the physical plant may be very complex. All of the states (except Montana) that reported using funding formulas in 1999 provide state resources for plant operations through a formula. Connecticut, Oregon, South Carolina, and Texas use multiple formulas to calculate detailed plant needs. These complicated methods differentiate among types of building construction, usage of space, and size of institution. Differences among buildings on each campus are recognized, and the unequal costs of maintaining, cooling, heating, and lighting each building are built into the formulas.

On the other hand, some states provide a flat dollar amount per gross square foot of building space. A plant formula that uses this rate per base factor method has the advantage of being simple and easy to calculate. However, unless the dollar amount per square foot is differentiated by type of building construction (i.e., one rate for frame buildings, another for brick or masonry, and a third for steel), legitimate differences in maintenance costs are not recognized.

Examples of the more complex formulas for plant operations follow. Although this set of formulas is more detailed than a simple rate per gross square foot, it recognizes that there are important differences in a campus' physical facilities that impact on cost.

1. *Plant funding = the sum of Building Maintenance + Custodial Services +Grounds Maintenance + Utilities*
   Where: Building Maintenance = a maintenance cost factor times the replacement cost of the building, and the maintenance cost factor varies by type of construction and whether or not the building is air-conditioned;
   Custodial services = square footage divided by the average square footage maintained by one person per year times a salary rate; Grounds maintenance = rate times the number of acres maintained; and Utilities = actual prior year expenditures, adjusted for inflation and other cost Increases.

2. *Plant funding = $4.17 times the number of category I GSF space + $3.44 times the number of Category II GSF + $5.54 times the number of health care GSF + utilities + $2,267 per acre maintained + lease costs – 25% of indirect cost recovery funding*

One of the problematic issues in plant funding formulas is the decision related to for which buildings and areas of campus the state should provide funding. Texas, for example, includes within the formula only the square footage and acreage of buildings and grounds that relate to instruction, research, and public service (or E & G buildings). Arizona excludes research buildings constructed with private funds even though those buildings would be considered "E & G" buildings by other states. Some states include buildings and grounds used by intercollegiate athletics, while others exclude these facilities as "auxiliary."

Another issue related to plant funding is whether to include funding for building renewal within the operating budget formulas. Texas includes an amount equal to a percentage of the replacement cost of the building, where the percentage varies by type of building. On the other hand, Arizona allocates a percentage equal to the replacement cost of the building, but the funding is included in the capital budget appropriation, not the operating appropriation, and is placed in the plant fund portion of the universities' budgets. From a different perspective, Maryland does not place any funding for building renovation in the college and university budgets but funds all building renovation and major maintenance from the budget of the State Department of Planning and Construction. Idaho funds certain major renovations and maintenance projects through the Permanent Building Fund.

D.3.b.8. Scholarships and Fellowships

This category encompasses all expenditures for scholarships and fellowships, including prizes, awards, federal grants, tuition and fee waivers, and other aid awarded to students for which services to the institution are not required. Information on scholarships and fellowships formulas used in 1996 may be found in Exhibit B-8 in Appendix B.

Only Kentucky, Maryland, Mississippi, Montana, and Oklahoma calculated an allocation for scholarships and fellowships. In each case except Oklahoma, which calculated the amount as a dollar value times the number of FTE students, the formula amount was calculated as equal to a percentage of tuition revenues. These approaches all provide horizontal equity but fail to provide vertical equity in that neither the cost to the student or the institution nor student's ability to pay are considered in the formula. Consequently, there really is no "best practices" example of a formula for this program area. Two examples of scholarships and fellowship formulas are given below.

1. *Scholarships and fellowships amount = 10.5% of estimated income from undergraduate student tuition and fees.*

2. *Scholarships and fellowships amount = amount times the number of full-time equivalent students*

D.3.b.9. Revenue Deduction Components

The majority of the states that use funding formulas in the resource allocation process do not employ a revenue deduction component. In those states, the calculation of the formula funding amounts are intended to reflect only the state share of funding. Where a revenue deduction component is included in the formula, the most common calculation is to deduct a percentage or all of non-resident tuition and fees.

Alabama's revenue deduction was based on the weighted average credit hour charged to full-time students. Each institution charges a different tuition, so the average tuition charge per weighted average credit hour across all campuses was calculated and then multiplied by the number of credit hours. For historically black institutions, the amount deducted was equal to 90 percent of the actual weighted credit hour charges.

Mississippi deducted a percentage of the total calculated by the formula, with the percentage varying by sector. Georgia deducted not only all unrestricted tuition and fee revenues but also certain other unrestricted revenues. Kentucky and Tennessee deducted an amount equal to a tuition rate times enrollment, plus a percentage of investment income. West Virginia deducted only tuition revenues generated by a higher percentage of non-resident students than average for each institution's peer group.

South Carolina deducts an amount equal to non-resident full-time student enrollment times the "cost of education", up to total non-resident tuition and fee revenues received; and resident tuition and fee revenues equivalent to 25 percent of the "cost of education." In this deduction step, a calculation is made to determine undergraduate and graduate "cost of education," defined by a formula unique to South Carolina. State

law requires that non-resident students pay at least the full cost of education, which results in the deduction on non-resident fees up to the cost of education. Institutions are permitted to retain any non-resident revenues above the calculated amount to encourage institutions to charge non-residents higher amounts to keep resident tuition and fees as low as possible. For resident students, the Commission on Higher Education has interpreted the state policy of low tuition to mean that state residents pay 25 percent of the cost of education determined separately for undergraduate and graduate students. If total resident tuition revenues exceed 100 percent of the calculated "deduction" amount, then the institution may retain the first 10 percent of the excess, but all amounts over 110 percent of the calculated amount are deducted from the institution's allocation. In South Carolina, institutions charge different tuitions, and have differing costs of education; consequently, the deduct amount must be calculated for each institution. Institutions have been critical of the deduction since the formula has not been fully funded for some time, and tuition has increased to supplant state revenues insufficient to meet the institutions' "needs" as calculated by the funding formula.

D.3.c. Emerging Trends in Formula Design and Usage

As indicated at the beginning of this section, there has been a constant evolution in both the design and usage of funding formulas and guidelines during the 50+ years that they have been in use. Some of the major trends are listed below:

More Detailed Categories. One long-term trend has been the development of more detailed guideline categories. Within the instruction component, for example, there has been a tendency toward the use of more discipline categories, more levels of instruction, and separate add-on rates for non-personal services expenses. As discussed

earlier, however, some states have found that adding more complexity in their formula has had adverse results.

Greater Use of Non-formula Categories. As a result of the increasing scale and complexity of state systems of higher education, there has been a greater use of non-formula categories as a supplement to formula/guideline calculations in recognition of the fact that the formula approach may not be adequate to meet the needs of some programs and activities (e.g., unique or specialized academic and administrative programs).

Increasing Focus on Quality and Performance. In response to growing public concerns over accountability and quality, some states have begun to implement funding mechanisms, either implicitly or explicitly, based on institutional performance. This shifts the focus from equity and adequacy in funding to outcomes achieved with the funding received.

D.4. Idaho's Allocation Mechanism

The current mechanism used by the Idaho State Board of Education to allocate revenues to the four senior institutions would be classified as a "base plus" allocation technique. That is, the allocation each year is computed as the base allocation of the prior year, plus (or minus) adjustments related to enrollment, new facilities, and special enhancements.

The Idaho State Board of Education established objectives or guiding principles for the allocation, and is to be commended for these objectives:

a. The funding process should offer maximum institutional flexibility to allocate funds internally to carry out roles and missions established by the Board.
b. The funding process should be a straightforward approach which can be used by the Board to express systemwide priorities.
c. There should be a clear and understandable relationship between institutional needs, the system-wide funding request, the legislative appropriations, the allocation of funds, and the ultimate use of the funds.

d. The funding process should not penalize institutions as the result of decisions related to the internal allocation of resources by other institutions.

e. Any incentives that the Board uses in the funding process should be explicit.

f. The funding process should be applied consistently from year-to-year so that there can be some level of predictability in the allocation as well as increased confidence in the outcome.

g. The funding process should encourage cooperative programs among institutions.

h. The funding process should be compatible with the Statewide Plan for Higher Education.[24]

These objectives correspond with several of the guiding principles enumerated earlier in this chapter, namely the criteria labeled as: goal-based, mission-sensitive, size-sensitive, responsive, adaptable to economic conditions and special situations, concerned with stability, simple to understand, flexible, and incentive-based. The Board's methodology is further explained as follows:

The allocation shall consist of the total of the lump sum general account appropriation and actual land grant endowment receipts. The allocation shall be made in the following order:

a. Each institution shall be allocated its base allocation of the prior year.

b. An enrollment Workload Adjustment shall be applied to the allocation of each institution. The adjustment shall be calculated as follows:

(1) A three-year moving average of credit hours multiplied by the program weights shall be used. The three (3) years to be used shall be those which precede the year of the allocation and shall consist of two (2) years of actual and one (1) year of estimated credit hours.

(2) Effective with the FY1990 allocation, credit hours generated from externally funded sources and contracts shall be removed from this adjustment. Credit hours for in-service teacher education shall not be removed.

(3) The total budget base of the institutions shall be multiplied by 0.33 and divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution.

(4) Program weights are the weighting factors applied to four (4) categories of instructional disciplines with different weights factors by category and course level. The groups and factors follow.

Group I: Physical Education Law Letters Library Sciences Mathematics Military Science Psychology Social Sciences	Group II: Area Studies Business and Management Education Communications Home Economics Public Affairs Interdisciplinary Studies
Group III: Agricultural and Natural Resources Architecture & Environmental Design Biological Sciences Fine and Applied Arts Foreign Languages Physical Sciences	Group IV: Engineering Health Professions Computer and Information Sciences

The weighting factors for the above categories are as follows:

	Category			
Course Level	I	II	III	IV
Lower Division	1.00	1.30	1.60	3.00
Upper Division	1.50	1.90	2.50	3.50
Graduate	3.50	3.50	6.00	6.50
Law	2.60			

An additional 5 percent emphasis factor is given to the Primary Emphasis areas at each institution. These areas are:

Boise State University: Business Social Sciences (includes Economics) Public Affairs Performing Arts (excluding Art) Education Engineering	***Idaho State University:*** Health Professions Biological Sciences Physical Sciences Education
University of Idaho: Agriculture Forestry Mines Engineering Architecture Law Foreign Languages Education	***Lewis-Clark State College:*** Business Criminal Justice Nursing Social work Education

c. Operations and maintenance funds (custodial, maintenance and utilities) for new, major general education capital improvement projects shall be allocated to affect institutions.

d. Decision units above the base shall be consistent with the legislative budget request. The allocation of these decision units to the institutions shall be based on the proportionate share of each institution in the total budget request for these decision units applied to the increase in appropriations above the base excluding special allocations.

e. The Board may also allocate funds for special activities or projects at the discretion of the Board.

The components of the allocation mechanism will be examined in detail in the next chapter of this report.

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[2] Gross, Francis M. 1979. *Formula budgeting and the Financing of Public Higher Education: Panacea or Nemesis for the 1980s?* AIR Professional File, 3.

[3]Miller, James L. Jr. 1964. *State Budgeting for Higher Education: The Use of Formulas and Cost Analysis.* Ann Arbor, MI: University of Michigan.

[4] Moss, C.E. and Gaither, G.H. 1976. "Formula Budgeting: Requiem or Renaissance?" *Journal of Higher Education.* 47, 550-576.

[5] Millett, John D. 1974. *The Budget Formula as the Basis for State Appropriation in Support of Higher Education.* Indianapolis, IN: Academy for Educational Development.

[6] Gross, *op.cit.*

[7] McKeown, Mary P. and Layzell, Daniel T. 1994. "State Funding formulas for Higher Education: Trends and Issues." *Journal of Education Finance,* 19, 319-346.

[8] Ashworth, Kenneth H. 1994. *Formula Recommendations for Funding Texas Institutions of Higher Education.* Austin, TX: Texas Higher Education Coordinating Board.

[9] Boling, Edward. 1961. *Methods of Objectifying the Allocation of Tax Funds to Tennessee State Colleges.* Nashville, TN: George Peabody College of Vanderbilt University.

[10] Bowen, Howard R. 1980. *The Costs of Higher Education*. San Francisco, CA: Jossey-Bass, Inc.

[11] Cohn, Elchanan; Rhine, Sherrie; and Santos, Maria. 1989. "Institutions of Higher Education as Multi-Product Firms: Economies of Scale and Scope," *Review of Economics and Statistics,* 71, 2 (May, 1989) pp. 284 – 290.

[12] Ibid., p. 285.

[13] See for example, Hungate, Meeth and O'Connell, "The Quality and Cost of Liberal Arts College Programs" in E.J. McGrath *Cooperative Long Range Planning in Liberal Arts Colleges.* 1964. New York, Columbia University; Hawley, Boland and Boland, "Population Size and Administration in Institutions of Higher Education," *American Sociological Review,* 30 (April 1965): pp. 252-255.

[14] Carnegie Commission on Higher Education. 1972. *The More Effective Use of Resources.* New York: McGraw-Hill.

[15] Carnegie Commission on Higher Education. 1971. *New Students and New Places.* New York: McGraw-Hill.

[16] Bowen, op. cit., p. 182.

[17] Brinkman, Paul and Leslie, Larry. 1986. "Economies of Scale in Higher Education: Sixty Years of Research," *Review of Higher Education.* Association for the Study of Higher Education, v. 10, no. 1

[18] Broomall, Lawrence W. B.T. McMahon, G.W. McLaughlin and S.S. Patton. 1978. *Economies of Scale in Higher Education.*Blacksburg, VA: Virginia Polytechnic Institute Office of Institutional Research.

[19] Koshal, R.K. and Koshal, M. 1999. "Economies of Scale and Scope in Higher Education: A Case of Comprehensive Universities," *Economics of Education Review.* 18, pp. 269-277.

[20] Dundar, Halil and Lewis, Darrel R. 1995. "Departmental Productivity in American Universities: Economies of Scale and Scope," *Economics of Education Review,* 14, pp. 119-144.

[21] Hoenack, Stephen A. and Collins, Eileen. 1990. *The Economics of American Universities.* Albany, NY: State University of New York Press. P. 139.

[22] Cohn, Rhine, and Santos, op. cit.

[23] Brinkman, Paul. 1990, " Higher Education Cost Functions, " in Hoenack and Collins, op. cit.

[24] Idaho State Board of Education, *Governing Policies and Procedures*. Section V. Financial Affairs, T. Allocation of Lump Sum Appropriation. February, 2000.

E. ASSESSMENT OF THE FUNDING METHOD

E. ASSESSMENT OF THE FUNDING METHOD

This chapter describes the review of the current method of allocating resources or funding among the four institutions, including evaluation by the criteria or guiding principles and comparisons of spending patterns between the Idaho institutions and their peers. Recommendations for changes in the allocation method will be discussed in Section F.

E.1 Evaluation using the Guiding Principles

The Technical Oversight Committee agreed that the 14 criteria listed in Exhibit D-1 would be used as a component of analysis of the Idaho allocation mechanism. Each of the sections of the allocation of the lump sum appropriation is evaluated using these criteria. As was mentioned in Section D, the 14 characteristics often tend to be in opposition to one another. For instance, the desire to have a simple-to-understand funding model may preclude features that might contribute to a greater degree of equity (e.g., more detailed sub-categories to reflect institutional differences). Similarly, a model that is responsive to changes in enrollment levels may not be able at the same time to provide the desired level of stability.

The Idaho methodology has five parts (Base, Enrollment Workload Adjustment, Operations and Maintenance Funds, Decision Units, and Special Allocations) that will be discussed in detail below for the time period FY 1991 to FY 2001.

E.1.a. Base Allocation

The base comprises by far the largest portion of the allocation to the four senior institutions in Idaho. Each year in the allocation process each of the four institutions begins with its allocation of the prior year, from which or to which all adjustments are

made. The base allocation makes up over 90 percent of the university budgets and obviously is critical in the determination of equitable funding.

In FY 1990 an equity adjustment was made to the Boise State University budget to bring funding up to a par with the other three institutions. At that point, funding was declared to be equitable among the four institutions, and if all adjustments to the base from that point forward were equitable, then the base should have continued to represent an equitable allocation of resources among the four institutions. However, as the discussions in Section C and in the following sections enumerate, adjustments to the base in the 11 years since FY 1990 have been dis-equalizing.

Therefore, the base itself does not meet the **equity** test although it is **simple to understand, concerned with stability, goal-based,** and could be termed **mission-sensitive** and **size-sensitive.**

Funding that uses a base of the prior year's allocation, with adjustments to reflect changes in workloads, state policy, priorities, needs, and costs-of-living, is by far the most common method of allocating resources to higher education institutions (and other parts of state government). This method is very easy for legislators and other policy-makers to understand. On the other hand, it is difficult to correct the base allocations when inequities occur, and to keep the base allocation equitable over time. Recommendations for "corrections" to the base are included in Section F.

E.1.b. Enrollment Workload Adjustment

The enrollment workload adjustment is the most complicated of the steps in the allocation calculation. Because it is the most complicated step, reflecting changes in the workload and client base of the institutions, it is the area where many inequities can be introduced in the funding allocation.

There are at least five separate components of the enrollment workload adjustment that will be examined in the following paragraphs: weights, funding of only a portion of the adjustment, exclusion of professional/technical education credit hours, the use of the rolling three year average, and treatment of non-resident students.

E.1.b.1. Weights

One of the primary methods used to provide equity in resource allocation is the use of weights. Weighted student credit hours are used in the Idaho workload adjustment as a means of equalizing the costs across academic disciplines and across levels. Lower division, upper division, graduate, and first professional are the four levels recognized in the Idaho calculations.

A significant amount of research has been completed on the relative costs of providing one credit hour of instruction in the differing academic disciplines. At least 20 states have completed detailed cost studies to determine the costs of credit hours, or other units of instruction (e.g., staff units, full-time equivalent students). For example, the Illinois State Board of Higher Education, which does not use a funding formula for four-year colleges or universities, requires an annual cost study on not only instructional but also non-instructional costs of providing classes and other services at all Illinois public colleges and universities. These data have been collected since 1970, and provide a significant data base on how the costs of higher education have varied from discipline to discipline across institutional types and sizes.

Other states also have maintained excellent longitudinal data bases on the costs of instruction, which are used to calculate formula amounts or allocation amounts. These data bases are critical in calculating an equitable allocation to institutions when the instructional patterns of the student body vary widely across disciplines and levels of instruction. The objective is to distribute funds equitably when differences in institutional

size, location, clients, and mission are recognized. The key to the process is the identification or isolation of variables or factors that are directly related to actual program costs, while being at the same time detailed, reliable, not susceptible to manipulation by a campus and sufficiently differentiated to recognize differences in institutional role and mission.

The Idaho mechanism includes in its weights additional consideration for the special missions or primary areas of emphasis at each of the institutions. Thus, this component of the allocation mechanism can be judged to be **mission-sensitive,** and **responsive** to changing institutional workload and missions.

The Idaho weights vary by course level and by category of instructional discipline and are displayed in Exhibit E-1. The maximum weight given any category is 6.50 for graduate instruction in engineering, the health professions, and computer and information sciences.

EXHIBIT E-1
IDAHO INSTRUCTIONAL/WORKLOAD WEIGHTS
BY INSTRUCTIONAL DISCIPLINE CATEGORY

COURSE LEVEL	CATEGORY I	CATEGORY II	CATEGORY III	CATEGORY IV
Lower Division	1.00	1.30	1.60	3.00
Upper Division	1.50	1.90	2.50	3.50
Graduate	3.50	3.50	6.00	6.50
Law	2.60			

Exhibits E-2 through E-5 display the funding formula instructional weights used by Alabama, Arkansas, Kentucky, South Carolina, Texas, and Tennessee. In addition, the Idaho weights and the cost data from Illinois are included. For states that have a first professional level, those weights are shown in Exhibit E-4 with the master's level weights.

EXHIBIT E-2
LOWER DIVISION WEIGHTS BY DISCIPLINE

CIP Code	Discipline	Educational System								
		Idaho	Alabama	Arkansas	Illinois	Kentucky	South Carolina	Texas	Tennessee	Average
1	Agriculture Business & Production	1.60	1.28	1.37	1.87	1.52	1.67	1.86	1.22	
2	Agricultural Science	1.60	1.28	1.37	1.87	1.52	1.67	1.86	1.22	
3	Conservation & Renew Natural Resources	1.60	1.28	1.65	1.95	1.52	1.67	1.86	1.22	
4	Architecture & Related Programs	1.60	1.76	1.65	2.38	2.26	1.79	2.64	1.22	
5	Area, Ethnic & Cultural Studies	1.30	0.85	1.65	2.48	1.00	1.25	1.00	1.10	
9	Communications	1.30	0.85	1.65	1.74	1.00	1.56	1.00	1.10	
11	Computer & Information Science	1.60	1.10	1.37	1.69	1.85	1.04	1.83	1.10	
11	Computer & Information Science	1.30	1.10	1.37	1.69	1.85	1.04	1.83	1.10	
13	Education	1.30	0.88	1.94	1.79	1.06	1.14	1.08	1.10	
13	Physical Education	1.00	0.88	1.94	1.79	1.06	1.14	1.08	1.10	
14	Engineering	3.00	1.76	1.65	3.14	2.26	1.25	2.64	1.22	
16	Foreign Language & Literature	1.60	0.85	2.74	1.59	1.00	1.56	1.00	1.10	
19	Home Economics	1.30	1.18	2.74	1.51	1.49	1.67	1.47	1.10	
22	Law & Legal Studies	1.00			5.66	1.00	1.19		1.10	
23	English Language & Literature/Letters	1.00	0.85	1.65	1.50	1.00	1.39	1.00	1.10	
24	L A & Science/Gen'l Studies & Humanities	1.30	1.07	1.65	2.10	1.00	1.25	1.00	1.10	
25	Library Science	1.00	0.95	2.74	3.93	1.13	1.47	1.20	1.22	
26	Biological Sciences/Life Sciences	1.60	1.10	1.00	1.55	1.31	1.09	1.52	1.10	
27	Mathematics	1.00	0.85	1.37	1.57	1.00	1.09	1.00	1.00	
29	Military Technology	1.00	0.10				2.50	0.16	1.00	
30	Multi/Interdisciplinary Studies	1.30	1.07	1.65	1.62	1.00	1.47	1.00	1.10	
31	Parks, Recreation, Leisure & Fitness	1.00	0.95	1.65	1.37	1.00	1.47	1.00	1.10	
38	Philosophy & Religion	1.00	0.85	1.65	1.47	1.00	1.39	1.00	1.10	
40	Physical Sciences	1.60	1.10	1.37	1.40	1.31	1.00	1.52	1.10	
42	Psychology	1.00	0.85	1.00	1.00	1.00	1.04	1.00	1.00	
43	Protective Services	1.30	0.95	2.74	1.39	1.00	1.32	1.00	1.00	
44	Public Administration & Service	1.30	0.95	1.65	1.87	1.00	1.25	1.00	1.00	
45	Social Science & History	1.00	0.85	1.00	1.34	1.00	1.25	1.00	1.00	
46	Construction Trades	1.00		2.74	4.58	1.13		1.43	1.22	
50	Visual and Performing Arts	1.60	1.78	2.74	2.14	2.11	1.92	2.18	1.22	
50	Visual and Performing Arts	1.60	1.78	2.74	2.14	2.11	1.92	2.18	1.22	
	Emphasis for BSU									
51	Health Professions & Related Sciences	3.00	2.33	3.29	2.47	3.52	3.57	3.15	2.25	
52	Business Management & Admin Services	1.30	0.95	1.11	1.62	1.21	1.04	1.23	1.00	
-	Developmental/Basic Skills			2.74						

EXHIBIT E-3
UPPER DIVISION WEIGHTS BY DISCIPLINE

CIP Code	Discipline	Educational System							
		Idaho	Alabama	Arkansas	Illinois	Kentucky	South Carolina	Texas	Tennessee
1	Agriculture Business & Production	2.50	1.74	2.74	2.41	1.94	1.67	1.86	1.69
2	Agricultural Science	2.50	1.74	2.74	2.41	1.94	1.67	1.86	1.69
3	Conservation & Renew Natural Resources	2.50	1.74	2.74	2.23	1.94	1.67	1.86	1.69
4	Architecture & Related Programs	2.50	2.38	2.74	3.62	2.86	1.79	2.64	1.69
5	Area, Ethnic & Cultural Studies	1.90	1.15	2.74	4.11	1.86	1.25	1.00	1.46
9	Communications	1.90	1.15	2.74	2.31	1.86	1.56	1.00	1.46
11	Computer & Information Science	2.50	1.48	1.65	2.05	2.54	1.04	1.83	1.69
13	Education	1.90	1.20	2.74	2.14	1.23	1.14	1.08	1.69
13	Physical Education	1.50	1.20	2.74	2.14	1.23	1.14	1.08	1.69
14	Engineering	3.50	2.38	2.74	3.60	2.86	1.25	2.64	1.69
16	Foreign Language & Literature	2.50	1.15	4.12	2.02	1.86	1.56	1.00	1.69
19	Home Economics	1.90	1.60	4.12	2.22	1.84	1.67	1.47	1.69
22	Law & Legal Studies	1.50			2.79	1.86	1.19		1.10
23	English Language & Literature/Letters	1.50	1.15	2.74	2.12	1.86	1.39	1.00	1.46
24	L A & Science/Gen'l Studies & Humanities	1.90	1.45	2.74	1.72	1.86	1.25	1.00	1.69
25	Library Science	1.50	1.29	4.12	2.83	1.24	1.47	1.20	1.69
26	Biological Sciences/Life Sciences	2.50	1.48	2.74	2.73	2.43	1.09	1.52	1.69
27	Mathematics	1.50	1.15	2.74	2.12	1.86	1.09	1.00	1.46
29	Military Technology	1.50	0.14				2.50	0.16	1.46
30	Multi/Interdisciplinary Studies	1.90	1.45	2.74	1.63	1.86	1.47	1.00	1.69
31	Parks, Recreation, Leisure & Fitness	1.50	1.29	2.74	1.90	1.86	1.47	1.00	1.69
38	Philosophy & Religion	1.50	1.15	2.74	2.01	1.86	1.39	1.00	1.46
40	Physical Sciences	2.50	1.48	2.74	2.07	2.43	1.00	1.52	1.69
42	Psychology	1.50	1.15	1.65	1.78	1.86	1.04	1.00	1.46
43	Protective Services	1.90	1.29	2.74	1.75	1.86	1.32	1.00	1.69
44	Public Administration & Service	1.90	1.29	2.74	2.42	1.86	1.25	1.00	1.69
45	Social Science & History	1.50	1.15	2.74	2.21	1.86	1.25	1.00	1.46
46	Construction Trades	1.50		4.12	4.89	1.23		1.43	1.69
50	Visual and Performing Arts	2.50	2.40	4.12	3.13	3.03	1.92	2.18	1.69
50	Visual and Performing Arts	2.50	2.40	4.12	3.13	3.03	1.92	2.18	1.69
51	Health Professions & Related Sciences	3.50	3.15	4.12	2.56	3.40	3.57	3.15	2.25
52	Business Management & Admin Services	1.90	1.29	1.65	2.62	1.49	1.04	1.23	1.46

EXHIBIT E-4
MASTERS LEVEL WEIGHTS BY DISCIPLINE

CIP Code	Discipline	Educational System							
		Idaho	Alabama	Arkansas	Illinois	Kentucky	South Carolina	Texas	Tennessee
1	Agriculture Business & Production	6.00	4.57	5.49	5.10	5.42	4.17	4.39	2.75
2	Agricultural Science	6.00	4.57	5.49	5.10	5.42	4.17	4.39	2.75
3	Conservation & Renew Natural Resources	6.00	4.57	5.49	5.07	5.42	4.17	4.39	2.75
4	Architecture & Related Programs	6.00	5.46	5.49	5.68	7.07	4.17	6.55	2.75
5	Area, Ethnic & Cultural Studies	3.50	2.73	5.49	5.87	3.34	2.08	3.15	2.20
9	Communications	3.50	2.73	5.49	4.23	3.34	2.78	3.15	2.20
11	Computer & Information Science	6.00	5.36	5.49	3.63	6.15	2.78	5.27	2.20
11	Computer & Information Science	3.50	5.36	5.49	3.63	6.15	2.78	5.27	2.20
13	Education	3.50	2.30	2.74	2.94	2.91	2.08	2.58	2.20
13	Physical Education	3.50	2.30	2.74	2.94	2.91	2.08	2.58	2.20
14	Engineering	6.50	5.46	5.49	5.35	7.07	2.08	6.55	2.75
16	Foreign Language & Literature	6.00	2.73	5.49	4.39	3.34	2.78	3.15	2.75
19	Home Economics	3.50	3.34	5.49	3.67	4.14	2.08	3.47	2.75
22	Law & Legal Studies	2.60	2.31		4.72	3.34	0.84	2.58	1.10
23	English Language & Literature/Letters	3.50	2.73	5.49	4.16	3.34	2.27	3.15	2.20
24	L A & Science/Gen'l Studies & Humanities	3.50	3.23	5.49	3.20	3.34	2.08	3.15	2.75
25	Library Science	3.50	3.27	5.49	3.76	3.58	1.92	3.37	2.75
26	Biological Sciences/Life Sciences	6.00	5.36	5.49	5.75	6.17	2.78	5.72	2.75
27	Mathematics	3.50	2.73	5.49	4.42	3.34	2.78	3.15	2.20
30	Multi/Interdisciplinary Studies	3.50	3.23	5.49	3.16	3.34	2.08	3.15	2.75
31	Parks, Recreation, Leisure & Fitness	3.50	3.27	5.49	5.08	3.34	3.13	3.15	2.20
38	Philosophy & Religion	3.50	2.73	5.49	6.60	3.34	2.27	3.15	2.20
40	Physical Sciences	6.00	5.36	5.49	7.19	6.17	2.50	5.72	2.75
42	Psychology	3.50	2.73	5.49	4.27	3.34	1.92	3.15	2.20
43	Protective Services	3.50	3.27	5.49	3.49	3.34	1.79	3.15	2.20
44	Public Administration & Service	3.50	3.27	5.49	3.30	3.34	2.08	3.15	2.20
45	Social Science & History	3.50	2.73	5.49	4.71	3.34	2.08	3.15	2.20
46	Construction Trades	3.50			12.32	3.14			
50	Visual and Performing Arts	6.00	4.95	5.49	5.89	5.88	3.13	5.19	2.75
50	Visual and Performing Arts	6.00	4.95	5.49	5.89	5.88	3.13	5.19	2.75
51	Health Professions & Related Sciences	6.50	5.82	5.49	4.29	6.97		6.17	2.82
52	Business Management & Admin Services	3.50	3.27	2.74	4.28	4.11	1.47	3.43	2.20

EXHIBIT E-5
DOCTORAL LEVEL WEIGHTS BY DISCIPLINE

CIP Code	Discipline	Educational System							
		Idaho	Alabama	Arkansas	Illinois	Kentucky	South Carolina	Texas	Tennessee
1	Agriculture Business & Production	6.00	16.03	9.15	5.23	17.33	8.33	13.03	5.50
2	Agricultural Science	6.00	16.03	9.15	5.23	17.33	8.33	13.03	5.50
3	Conservation & Renew Natural Resources	6.00	16.03	9.15	4.33	17.33	8.33	13.03	5.50
4	Architecture & Related Programs	6.00	17.60	9.15	11.41	20.13	4.17	17.06	5.50
5	Area, Ethnic & Cultural Studies	3.50	10.33	9.15	11.35	12.02	4.17	9.62	5.50
9	Communications	3.50	10.33	9.15	7.33	12.02	5.00	9.62	5.50
11	Computer & Information Science	6.00	17.60	9.15	4.84		3.57		5.50
11	Computer & Information Science	3.50	17.60	9.15	4.84		3.57		5.50
13	Education	3.50	8.79	9.15	5.47	10.30	2.78	7.95	5.50
13	Physical Education	3.50	8.79	9.15	5.47	10.30	2.78	7.95	5.50
14	Engineering	6.50	17.60	9.15	6.10	20.13	4.17	17.06	5.50
16	Foreign Language & Literature	6.00	10.33	9.15	5.77	12.02	5.00	9.62	5.50
19	Home Economics	3.50	9.31	9.15	5.74	11.47	2.08	8.62	5.50
22	Law & Legal Studies				59.05				5.50
23	English Language & Literature/Letters	3.50	10.33	9.15	5.13	12.02	5.00	9.62	5.50
24	L A & Science/Gen'l Studies & Humanities	3.50	10.33	9.15	4.79	12.02	4.17	9.62	5.50
25	Library Science	3.50	13.45	9.15	11.70	11.16	2.27	9.80	5.50
26	Biological Sciences/Life Sciences	6.00	17.60	9.15	5.16	17.85	3.57	15.37	5.50
27	Mathematics	3.50	10.33	9.15	7.73	12.02	3.57	9.62	5.50
30	Multi/Interdisciplinary Studies	3.50	10.33	9.15	14.75	12.02	4.17	9.62	5.50
31	Parks, Recreation, Leisure & Fitness	3.50	13.45	9.15	10.55	12.02	3.13	9.62	5.50
38	Philosophy & Religion	3.50	10.33	9.15	7.68	12.02	5.00	9.62	5.50
40	Physical Sciences	6.00	17.60	9.15	10.63	17.85	3.13	15.37	5.50
42	Psychology	3.50	10.33	9.15	6.47	12.02	3.57	9.62	5.50
43	Protective Services	3.50	13.45	9.15	7.32	12.02	1.79	9.62	5.50
44	Public Administration & Service	3.50	13.45	9.15	4.71	12.02	4.17	9.62	5.50
45	Social Science & History	3.50	10.33	9.15	6.97	12.02	4.17	9.62	5.50
46	Construction Trades	3.50			51.04				
50	Visual and Performing Arts	6.00	17.71	9.15	5.52	20.36	3.13	13.92	5.50
51	Health Professions & Related Sciences	6.50	17.60	9.15	7.62	18.26	3.13	14.39	5.63
52	Business Management & Admin Services	3.50	13.45	9.15	24.82	15.77	2.08	13.71	5.50

Weights used in funding vary from a low of 0.10 for lower division Military Technology in Alabama to a high of 20.36 for doctoral level visual and performing arts in Kentucky. Actual costs in Illinois vary from 1.0 to 59.05 for doctoral level law courses.

There is variation in the number of levels and number of cost categories as well. Idaho uses four course levels: lower division, upper division, graduate, and law (also called first professional in some states). South Carolina and Texas use four levels also, but their levels are undergraduate, masters, doctoral, and first professional while Tennessee uses five: lower division, upper division, masters, doctoral, and first professional. Tennessee uses 4 cost categories, Arkansas 7 at the lower division level but only 3 at the upper division, Alabama 10, Texas 13, and South Carolina 14.

The weights used by Idaho are within the range of the other states at the lower and upper division levels, but tend to be higher at the masters' level and lower at the doctoral level. This may be due to the fact that Idaho recognizes only "graduate" instruction as opposed to having separate masters' and doctoral levels.

In his meta-analysis of the discipline costs of instruction, Brinkman found that upper division costs were, on average, 1.6 to 1.8 times as much as lower division instruction. Masters' level was 4 to 5 times as much; and doctoral education was 8 to 9 times the cost of lower division instruction. The Idaho weights at the upper division and graduate level do not conform to the weights Brinkman found in his meta-analysis, and also vary from the weights used by the states in Exhibits E-3 to E-5.

Because the assignment of proper weights to instructional disciplines by level of instruction is so critical to the **equity** of any funding or allocation methodology, it is essential that the weights used for the Idaho institutions reflect actual differences in the costs of instruction. As the weights currently exist, masters' level instruction in some disciplines may receive a larger allocation than is necessary to provide **adequate**

funding; on the other hand, doctoral level instruction may not be receiving a sufficiently large enough allocation to ensure either **equity or adequacy.**

E.1.b.2. Use of the rolling three year average

The Idaho State Board of Education policy on workload adjustments states that "A three-year moving average of credit hours multiplied by the program weights shall be used. The three (3) years to be used shall be those which precede the year of the allocation and shall consist of two (2) years of actual and one (1) year of estimated credit hours."

The three-year rolling average provides a buffer for institutions when enrollments are declining, and therefore, is consistent with the guiding principles, **concerned with stability and responsive.** When enrollments are stable or declining, institutions are pleased to have a three-year rolling average used. However, when enrollments are increasing, state funds for increased enrollments are not received as fast as institutions perceive they should receive them and from the institutions' perspective, fail to meet the **adequacy-driven** criteria.

From a state perspective, however, rolling average workload measures are **size-sensitive** in that a rolling average considers economies of scale, and the changes in workload that are reflected in marginal costs. Any increases or decreases in costs related to changes in enrollment happen at the margins; this means that costs do not go up as fast as the average cost of offering an additional credit hour, nor do costs decrease as fast as the average cost when enrollment declines. The marginal cost is less than the average cost in general because the fixed costs of offering instructional programs are already in the base, and in the average cost. The only additional costs are "variable" costs, that is, costs related to the change in enrollment.

The three-year rolling average is not in itself dis-equalizing. However, the application of the rolling average in Idaho does introduce inequities that are discussed in the next section.

E.1.b.3. Funding of only a Portion of the Workload Adjustment

The Idaho State Board of Education policy related to the workload adjustment states that "The total budget base of the institutions shall be multiplied by 0.33 and divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution."

This calculation has the effect of funding only **one-ninth** of any changes in enrollment or workload in any one year because it is done as part of the rolling three-year average applied to one-third of the institutions' budgets. As a result, over time, only one-third of the changes in workload is reflected in the institutions' base budgets. This adjustment over time introduces **inequity** into the base, and is responsible for a significant portion of the loss in the equity of the allocation methodology since 1991.

This calculation results in lack of funding for two-thirds of any growth in enrollment while at the same time providing funding for "phantom" students when enrollment declines. Only one-third of declines in enrollment is reflected in the base budgets of the institutions and this has the impact of continuing funding for students who are no longer attending the institution. Although this calculation may have been introduced at one point to reflect the marginal costs of additional enrollments, there are other methods of reflecting marginal costs that are not dis-equalizing.

E.1.b.4. Exclusion of Professional/Technical Education

Although the Idaho State Board of Education is responsible not only for general higher education but also for professional/technical education, the allocation of resources to institutions that provide general higher education and professional/technical education is not coordinated. Boise State University, Idaho State University, and Lewis-Clark State College all provide both general higher education and professional/technical education.

These three institutions receive funding for professional/technical education credit hours through a separate allocation from the State Board. The allocation may be intended to cover all the costs of these students, but actually provides funding only for the instructional components. Because professional/technical students are not counted in the workload adjustment, certain additional costs of registering, providing student services, and maintaining facilities for the vocational/technical students are not included in the general institutional allocations. In addition, having two separate "programs" introduces a level of complexity into institutional planning. Each president should be able to coordinate, plan, and budget in a coordinated fashion for all of the missions of the institution.

The University of Idaho also receives special allocations for students enrolled in programs sponsored by the Western Interstate Commission for Higher Education (WICHE) and for programs related to its agricultural and research missions. Workload measures for these special programs also are not included. These programs add complexity to the administrative components of the University of Idaho, and require library, physical plant, and other resources.

When evaluated by the guiding principles or criteria, the exclusion of these students is **dis-equalizing, not mission-sensitive, and inadequate.** It also is not **simple to understand.**

E.1.b.5. Treatment of non-resident students

Non-resident full-fee paying students are not included in the workload calculations of the allocation methodology. This provision on the face appears to be consistent with the policy of non-resident students paying for all their educational costs so as not to be a burden on Idaho taxpayers.

As the policy is operationalized in Idaho, however, it is susceptible to institutional manipulation and fails the criterion **reliant on valid and reliable data.** (Note: Being susceptible to institutional manipulation does not mean nor imply that Idaho institutions are in any way manipulating the data.) Under current policy, if a non-resident student is not paying full non-resident fees, then that non-resident student may be counted in the workload of the institution. Students may be given partial waivers of fees, and thus, would be counted in the allocation methodology. This implies that the policy also does not meet the **incentive-based** criterion since there is what could be called an inappropriate incentive for institutional behavior. An institution could provide a $100 fee waiver so that a non-resident student would be included in workload counts.

Each of the four senior institutions has varying abilities to provide “waivers” or other financial aid to non-resident students. Institutions are limited to providing waivers to non-residents to no more than 3 percent of total full-time equivalent students.

E.1.c. Operations and Maintenance Funds

Each of the four senior higher education institutions have been allocated funds for the operation and maintenance of new Educational and General capital improvement projects over the time period FY 1991 to FY 2001. These allocations will be referred to

as "new occupancy costs" in this discussion. Exhibit E-6 displays the new occupancy costs allocated to each of the institutions for the 11 year time period.

EXHIBIT E-6
NEW OCCUPANCY COST ALLOCATIONS FY 1991 TO FY 2001

YEAR	BOISE STATE	IDAHO STATE	LEWIS-CLARK	U OF IDAHO
FY 1991	$ 208,200	$ 0	$ 148,000	$ 0
FY 1992	0	151,600	38,200	31,500
FY 1993	4,700	0	0	59,000
FY 1994	75,300	52,000	0	274,100
FY 1995	176,900	53,500	0	253,500
FY 1996	136,600	0	0	336,400
FY 1997	110,000	207,500	10,000	0
FY 1998	160,700	0	0	0
FY 1999	14,900	473,400	0	76,300
FY 2000	386,500	94,600	0	318,400
FY 2001	0	89,500	0	332,100
TOTAL	**$1,273,800**	**$1,122,100**	**$196,200**	**$1,681,300**

Source: Data provided by State Board of Education staff in "History of Allocations Above the Base" document dated 4-16-01.

Operation and maintenance funds for all other general education, professional/technical, and special program buildings on the campuses are in the base budgets, and a discussion of that allocation may be found in Section E.1.a.

The calculation used by Idaho for this component of the allocation introduces ***horizontal equity*** factors, is ***adequacy-driven, size-sensitive, responsive, adaptable to economic conditions,*** and ***reliant on valid and reliable data.*** Horizontal equity is addressed by providing the same amount per gross square foot of new space; adequacy is introduced by providing an amount that is based on amounts spent across the state to maintain and operate these buildings. This calculation is size-sensitive in that it considers the size of the buildings; because the calculation is based on an accurate count of square footage, it meets the valid data criterion.

E.1.d. Decision Units

Over the time period FY 1991 to FY 2001 the State Board of Education made a number of above-the-base-budget allocations that were related to items such as salary increases and other cost-of-living adjustments. These adjustments have been called "General Allocations" and were allocated "based on the proportionate share of each institution in the total budget request for these decision units applied to the increase in appropriations above the base, excluding special allocations" by Board policy. Exhibit E-7 provides a summary of these allocations.

EXHIBIT E-7
DECISION UNIT ALLOCATIONS, FY 1991 TO FY 1992

YEAR	BOISE STATE	IDAHO STATE	LEWIS-CLARK	U OF IDAHO
FY 1991	$ 2,672,400	$ 2,284,400	$ 502,800	$ 3,734,700
FY 1992	1,489,000	1,355,400	299,800	2,244,600
FY 1993	(174,300)	(158,500)	(27,400)	(209,000)
FY 1994	1,707,600	1,486,900	298,700	2,050,200
FY 1995	2,629,200	2,261,500	498,100	3,606,200
FY 1996	2,587,800	2,334,600	501,000	3,311,500
FY 1997	1,894,600	1,652,400	359,100	2,583,800
FY 1998	481,600	428,900	90,200	626,600
FY 1999	3,527,500	3,173,100	746,400	4,507,100
FY 2000	1,759,800	1,637,500	335,500	2,280,200
FY 2001	2,900,200	2,658,900	540,700	3,652,500
TOTAL	**$24,457,500**	**$21,748,900**	**$4,729,800**	**$32,714,500**

Source: Data provided by State Board of Education staff in "History of Allocations Above the Base" document dated 4-16-01.

On the face, these allocations are *a priori* equitable because each institution received its proportional share of the allocation. However, the analysis holds **if and only if** the base is itself equitable. As was discussed in the previous section on the base, the base itself is ***not*** equitable, and has become more inequitable over time in part because of the partial funding of workload adjustments and disequalization caused by special allocations (which will be discussed in the following section). Thus, the *a priori* equity analysis does not hold up to additional scrutiny.

On the other hand, this component of the allocation methodology does address the **adequacy** issue by striving to provide additional resources to the institutions. In addition, this component is **adaptable to economic conditions, simple to understand flexible, and size-sensitive.**

E.1.e. Special Allocations

Over the ten year time period FY 1991 to FY 2001 the State Board of Education made a number of special allocations which are shown in Exhibit E-8.

EXHIBIT E-8
SPECIAL ALLOCATIONS, FY 1991 TO FY 2001

YEAR	BOISE STATE	IDAHO STATE	LEWIS-CLARK	U OF IDAHO
FY 1991	$ 0	$507,000	$ 0	$ 50,000
FY 1992	593,800	0	0	0
FY 1993	0	0	0	0
FY 1994	0	249,000	0	347,400
FY 1995	100,000	100,000	100,000	100,000
FY 1996	1,050,000	0	0	1,130,000
FY 1997	1,666,100	407,300	82,200	-272,700
FY 1998	692,700	619,900	322,700	1,419,900
FY 1999	315,400	1,628,900	108,600	760,000
FY 2000	642,500	822,900	284,200	773,100
FY 2001	226,700	229,200	31,500	348,700
TOTAL	**$5,287,200**	**$4,564,200**	**$929,200**	**$4,656,400**

Source: Data provided by State Board of Education staff in "History of Allocations Above the Base" document dated 4-16-01.

Special allocations are made for items that are of particular interest to the Board. Items that have been included in the special allocations vary from classroom technology grants that were distributed in equal amounts to each college and university to items such as the Masters of Social Work Program at Boise State University, to the HOIST program at the University of Idaho to a special request from ISU.

Each of these allocations fulfills the criteria **mission-sensitive**, **goal-based, and adaptable to special situations.** However, these allocations tend to be dis-equalizing because they do not provide any resources based on any equity measure.

E.1.f. Other Issues

As was discussed in Section E.1.b.4, although the allocation of the lump sum appropriation comprises the major portion of State appropriations to the Idaho senior institutions, it is not the only allocation of State funds. Boise State University, Idaho State University and Lewis-Clark State College also receive funds for professional/technical education. The University of Idaho receives funding for medical and veterinary education, the Forest Utilization Resource, the Idaho Geological Survey, and for its research and agricultural mission. Funds are under the control of the State Board of Education but are allocated and reviewed under a separate portion of the Board's responsibilities.

Professional/technical allocations provide funding for students who are enrolled in what could be called the "two-year" or "community/technical" mission of the three senior institutions. Funds provide for the instructional needs of the students enrolled in the professional/technical programs housed on the three campuses. However, these students are not included in the counts or measures of workload for the non-instructional components of their post-secondary experiences such as registration or student services.

Similarly, the University of Idaho provides support from the general education appropriation for its five special programs related to the University's land grant role and mission. The veterinary medicine and medical education programs do not produce student headcount and so do not generate funding under the allocation mechanism being evaluated in this study.

Additionally buildings that house the professional/technical programs and the research and agricultural missions have to be maintained; staff have to be recruited, hired, and retained; and a level of complexity is introduced into institutional

administration. Presidents at all the institutions are in effect running two institutions on one campus (at BSU, ISU and LCSC two academic institutions, and at UI, agricultural/research/service and academic institutions).

Although the separate funding for these programs is **mission-sensitive,** the exclusion of these students and staff from other workload measures is **dis-equalizing, not simple to understand,** and does not provide opportunities to take advantage of **economies of scale**.

E.2 Comparisons of Expenditures to Peer Institutions

For this phase of the analysis, data were collected from each institution's IPEDS Finance Report to the U. S. Department of Education, because these data are reported in a common format following generally accepted accounting principles. Adjustments were made to the IPEDS data to achieve greater comparability and comparisons of each of the institutions to the peers. Analyses focus on comparative measures of expenditures in the NACUBO expenditure categories listed earlier. Analyses compared per FTE and headcount student expenditures for each institution with per FTE student or headcount expenditures at the peer institutions. In addition, the distribution of expenditures across categories was examined.

The data sources for these analyses were the FY 1998-99 IPEDS finance survey and fall 1998 Student Enrollment survey from the National Center for Education Statistics (NCES). The FY1998-99 finance survey data are the latest financial information available from NCES; fall 1998 student enrollment data are the appropriate matching enrollments. Data were "cleaned" to ensure the highest level of comparability possible. The expenditure domain used for these analyses was total unrestricted educational and general expenditures and expenditures in each of the categories. Full-time equivalent students (FTES) were calculated from the IPEDS Student Enrollment

Survey by adding one-third the number of part-time students to the number of full-time students. This method for calculating FTES is the one used by NCES, and is ***not*** the same as the method Idaho uses in its reports. Data for the peers were not available to calculate FTES in the manner that the State Board of Education uses.

Exhibit E-9 summarizes the comparisons between the Idaho institutions and their peers while Exhibit E-10 provides comparisons to the average expenditures for all institutions in the Carnegie classifications from which the peers were drawn. Exhibits E-11 through E-22 provide data for each institution and include exhibits that display total, per headcount student, and per full-time equivalent student (FTES) unrestricted expenditures for each of the institutions and their peers.

In FY 1998-99, the Idaho public higher education institutions expended less for unrestricted educational and general goods and services per full-time equivalent student and per headcount student than did the peers, $12,896 per FTES and $10,242 per headcount student for the peers and $10,920 and $8,222 for Idaho. Similarly, the Idaho institutions expended less per FTE student for Instruction and Instruction – related items than did the peers, $7,572 per FTES for the peers and $7,388 for Idaho. (See Exhibit E-9.) However, the Idaho institutions expended more per student for Academic Support.

EXHIBIT E-9
COMPARISONS OF FY 1999 UNRESTRICTED EXPENDITURES PER STUDENT IDAHO INSTITUTIONS AND THEIR PEERS

	Instruction	Academic Support	E & G Expenditures	Instruction and Instruction-Related*
Average per FTE, BSU Peers	4,840	1,393	10,301	7,008
BOISE STATE UNIVERSITY	4,687	2,174	10,217	7,430
BOISE STATE AS A % OF PEER AVERAGE	96.8%	156.1%	99.2%	106.0%
Average per FTE, ISU Peers	5,266	1,544	11,485	7,548
IDAHO STATE UNIVERSITY	5,477	1,040	9,781	7,008
AS A % OF PEER AVERAGE	104.0%	67.4%	85.2%	92.9%
Average per FTE, LCSC Peers	4,194	923	9,378	6,136
LCSC	4,709	1,530	9,564	7,191
LCSC as a % of peer average	112.3%	165.8%	102.0%	117.2%
Average per FTE, UI Peers	5,848	1,654	14,667	8,186
UNIVERSITY OF IDAHO	5,611	1,541	13,210	7,776
UI as a % of peer average	96.0%	93.2%	90.1%	94.9%
Average per FTE Student, All Peers	5,319	1,508	12,896	7,572
Average, Idaho Institutions	5,196	1,603	10,920	7,388
Idaho as a % of peer average	97.7%	106.3%	84.7%	97.6%
Average per Headcount, BSU Peers	3,525	1,014	7,502	5,104
BOISE STATE UNIVERSITY	3,205	1,486	6,986	5,080
BOISE STATE AS A % OF PEER AVERAGE	90.9%	146.5%	93.1%	99.5%
Average per Headcount, ISU Peers	4,070	1,193	8,877	5,833
IDAHO STATE UNIVERSITY	4,261	809	7,610	5,453
AS A % OF PEER AVERAGE	104.7%	67.8%	85.7%	93.5%
Average per Headcount, LCSC Peers	3,513	773	7,854	5,139
LCSC	3,534	1,148	7,178	5,397
LCSC as a % of peer average	100.6%	148.5%	91.4%	105.0%
Average per Headcount Student, UI Peers	4,986	1,410	12,506	6,980
UNIVERSITY OF IDAHO	4,612	1,266	10,857	6,390
UI as a % of peer average	92.5%	89.8%	86.8%	91.6%
Average per Headcount Student, All Peers	4,225	1,198	10,242	6,013
Average, Idaho Institutions	3,913	1,207	8,222	5,564
Idaho as a % of peer average	92.6%	100.8%	80.3%	92.5%

- Instruction and instruction-related expenditures include academic support and student services expenditures.

EXHIBIT E-10
COMPARISONS OF FY 1999 UNRESTRICTED EXPENDITURES PER STUDENT IDAHO INSTITUTIONS AND NATIONAL AVERAGES FOR SIMILAR INSTITUTIONS

	Instruction	Academic Support	E & G Expenditures	Instruction and Instruction-Related
Average per FTE, BSU Group	4,772	1,261	10,238	6,800
BOISE STATE UNIVERSITY	4,687	2,174	10,217	7,430
BOISE STATE AS A % OF GROUP AVERAGE	98.2%	182.3%	99.8%	109.3%
Average per FTE, ISU Group	4,772	1,261	10,238	6,800
IDAHO STATE UNIVERSITY	5,477	1,040	9,781	7,008
AS A % OF GROUP AVERAGE	114.8%	84.3%	95.5%	103.1%
Average per FTE, LCSC Group	4,382	1,002	9,358	6,225
LCSC	4,709	1,530	9,564	7,191
LCSC as a % of Group average	107.5%	152.6%	102.2%	115.5%
Average per FTE, UI Group	7,209	2,087	17,163	10,154
UNIVERSITY OF IDAHO	5,611	1,541	10,857	7,776
UI as a % of Group average	77.8%	73.8%	77.0%	76.6%
Average per FTE Student, All Groups	5,449	1,425	12,230	7,720
Average, Idaho Institutions	5,196	1,603	10,920	7,388
Idaho as a % of Group average	95.4%	112.5%	89.3%	95.7%
Average per Headcount, BSU Group	3,741	988	8,026	5,331
BOISE STATE UNIVERSITY	3,205	1,486	6,986	5,080
BOISE STATE AS A % OF GROUP AVERAGE	85.7%	159.9%	87.0%	95.3%
Average per Headcount, ISU Group	3,741	988	8,026	5,331
IDAHO STATE UNIVERSITY	4,261	809	7,610	5,453
ISU AS A % OF GROUP AVERAGE	113.9%	83.7%	94.8%	102.3%
Average per Headcount, LCSC Group	3,435	786	7,336	4,880
LCSC	3,534	1,148	7,178	5,397
LCSC as a % of Group average	102.9%	146.1%	97.8%	110.6%
Average per Headcount Student, UI Group	6,144	1,779	14,628	8,654
UNIVERSITY OF IDAHO	4,612	1,266	10,857	6,390
UI as a % of Group average	75.1%	71.2%	74.2%	73.8%
Average per Headcount Student, All Groups	4,386	1,147	9,844	6,214
Average, Idaho Institutions	3,913	1,207	8,223	5,564
Idaho as a % of All Groups average	89.2%	105.3%	83.5%	89.5%

Exhibit E-10 displays summary data on unrestricted expenditures for the core functions of the Idaho institutions compared to all institutions from which the peer institutions were selected. In FY 1998-99, the Idaho public higher education institutions expended less for unrestricted educational and general expenditures per full-time

equivalent student than did the total of all institutions in similar classifications, $12,230 per FTES for the peers and $10,920 for Idaho. Idaho institutions, however, expended more per student for Academic Support than did the comparator institutions, $1,603 per FTES for Idaho compared to $1,425 for the comparators, and less than the comparators for Instruction and Instructional-Related items. These data are discussed for each of the institutions in the following sections.

E.2.a. Boise State University

Boise State University expended 93.1 percent of the average unrestricted educational and general expenditures spent by its peers in FY 1999. Total unrestricted Educational and General (E & G) expenditures per full-time equivalent student in FY99 totaled $10,301 per FTES for the peers and $10,217 for BSU. In FY99 Boise State spent $153 less per student for instruction, $781 more per FTE student for Academic Support, and $422 per FTES more for the combination of instruction, academic support, and student services, which is called “Instruction and Instructional-related Expenditures” in this paper.

Similarly, in FY99 Boise State spent $320 less per headcount student for instruction, $472 more per student for Academic Support, and $24 per headcount student less in instruction and instruction-related categories. The peer institutions spent more per student for research, libraries, student services, institutional support, and plant.

These data are displayed in Exhibits E-11, E-12, and E-13.

When compared to all Comprehensive I and II and Doctoral I and II public universities, BSU spent more per FTE student for Academic Support and Instruction and Instructional-related items, but less in total educational and general expenditures. This combination indicates that Boise State is focusing resources on students rather than administrative activities.

E.2.b. Idaho State University

In FY99 Idaho State University spent $211 more per FTES for instruction than did the peers, and $191 more per headcount student. (See Exhibits E-14, E-15, and E-16.) The peers spent more per student in other categories, and ISU's total unrestricted E & G expenditures per FTES were $1,704 less than its peers. In FY99, ISU spent $1,267 less per headcount student for unrestricted E & G expenditures, and $191 more per headcount student for instruction.

In comparison to all other Doctoral I and II or Comprehensive I and II public institutions, ISU spent more than 114 percent of the group average per student for Instruction. In addition, Idaho State University spent more in unrestricted instruction and instructional-related categories per student than did the average of "similar" institutions.

E.2.c. Lewis-Clark State College

In FY 1999 Lewis-Clark State College spent $515 more per full-time equivalent student for Instruction than did its peer institutions, and $21 more per headcount student. (Note: This finding implies that LCSC either has more part-time students, or its students take smaller credit hour loads than do students at the peer institutions.) When the sum of unrestricted instruction and instructional-related expenditures per full time equivalent student are compared, LCSC spent $9,564 per FTE student compared to a peer average of $9,378. Peer institutions spent significantly more per FTES for Public Service activities and for scholarships and fellowships than LCSC.

Exhibits E-17, E-18, and E-19 provide data on the monies spent by LCSC and its peer institutions for FY 1999. When compared to all public baccalaureate institutions, (Exhibit E-10) LCSC spent $4,709 per FTES compared to an average $4,382 for all baccalaureate institutions; other baccalaureate institutions also expended less per FTES

for Academic support and instructional-related expenditures. Like its sister institutions, LCSC is focusing more resources on items directly related to its missions.

E.2.d. University of Idaho

In FY99 the University of Idaho spent less on unrestricted E & G categories of expenditure per student than its peers did. On average, the peer institutions spent about $1,500 more per FTES for educational and general items and $237 more per FTES for instruction. When instruction and instruction-related expenses are compared, the University of Idaho spent $410 per FTES less than the peers did. These data are displayed in Exhibits E-20, E-21, and E-22.

The same pattern exists when the data per headcount student are examined. The University of Idaho spent $374 less per headcount student for instruction when compared to an average $4,986 for the peers. Academic support expenditures were approximately $144 per headcount student less than the peers were and total unrestricted E & G expenditures were $1,649 less per headcount student than the peers spent.

When compared to all public research or doctoral universities (Exhibit E-10), the University of Idaho spent approximately 80 percent of the amounts per full-time equivalent or headcount student as the other universities. These percentages are substantially less, relative to the national groups than those of the other Idaho institutions.

E.2.e. Summary of Findings Related to Peer Data

If funding were distributed equitably among the four Idaho institutions, it would have been expected that each of the institutions would be able to expend resources at approximately the same level per student relative to its peers. That is, funding among the Idaho institutions would be considered to be equitable if each Idaho institution spent

approximately the same percent of average peer expenditures per student. This would require that Boise State University, Idaho State University, Lewis-Clark State College, and the University of Idaho all is at 90 percent of the peer level of Instruction expenditures per student, for example. Or, that all four institutions spent about 100 percent of the amount of E & G expenditures per student spent by the peers. Or, that all were at 95 percent of the average expenditures per student for the combination of instruction, academic support, and student services spending.

The peer data related to FY 1999 expenditures for the Idaho institutions and their peers indicate that spending is not equal among the institutions. Since funding is correlated so closely with spending, we can conclude again that funding is not equitably distributed among the four Idaho institutions.

Therefore, based on both sets of data, it was concluded that the allocation mechanism does not meet the **equity** criterion.

The next section of this report will discuss options for mitigating the problems associated with the current allocation mechanism that were identified in this chapter.

F. RECOMMENATIONS FOR IMPROVEMENTS TO THE ALLOCATION METHODOLOGY

F. RECOMMENATIONS FOR IMPROVEMENTS TO THE ALLOCATION METHODOLOGY

This chapter provides recommendations for improvements to the allocation methodology that will result in a more equitable allocation of resources. Recommendations for changes in the allocation method are discussed for the five parts of the allocation method (Enrollment Workload Adjustment, Operations and Maintenance Funds, Decision Units, Special Allocations, and Base), and will include discussions of the treatment of non-resident students and the rolling three-year average.

F.1 Workload Adjustment

The enrollment workload adjustment is the most complicated of the steps in the allocation calculation. Because it is the most complicated step, reflecting changes in the workload and client base of the institutions, it is the area where many inequities have been introduced in the funding allocation.

There are five separate components of the enrollment workload adjustment that were examined in Section E, all of which were contributing to inequities in the funding formula. In addition the components can be adjusted to meet more completely the guiding principles or criteria discussed in Section D. The following paragraphs will provide options and recommendations related to weights, funding of only a portion of the adjustment, exclusion of professional/technical education credit hours, the use of the rolling three year average, and treatment of non-resident students.

F.1.a. Weights

One of the primary methods used to provide equity in resource allocation is the use of weights. As was discussed in Section E, weighted student credit hours are used in the Idaho workload adjustment as a means of equalizing the costs across academic disciplines and across levels. Lower division, upper division, graduate, and first

professional are the four levels recognized in the Idaho calculations. Academic disciplines also are grouped into four categories The maximum weight given any category is 6.50 for graduate instruction in engineering, the health professions, and computer and information sciences.

The Idaho weights vary from those used by states or systems that have completed a significant amount of research on the relative costs of providing one credit hour of instruction in the differing academic disciplines. Studies related to costs are attempting to answer the policy question: To what extent should legitimate differences in instructional cost among academic programs and student instructional levels be realized in the allocation formula?

The data bases from research in this area are critical in calculating an equitable allocation to institutions when the instructional patterns of the student body vary widely across disciplines and levels of instruction. The objective is to distribute funds equitably when differences in institutional size, location, clients, and mission are recognized. Other states have found that the key to the process is the identification or isolation of variables or factors that are directly related to actual program costs, while being at the same time detailed, reliable, not susceptible to manipulation by a campus and sufficiently differentiated to recognize differences in institutional role and mission.

F.1.a.1. Primary Emphasis Area Weights

The relevant policy questions are: 1) Are there unique programs and activities at the four senior institutions that should be funded in a separate component of the allocation formula or through additional weights (e.g., “primary emphasis areas”, unique institutional missions)? And 2) If so, what criteria should be used to determine such programs and activities and how should they be recognized in the allocation methodology?

The Idaho mechanism includes in its instructional weights additional consideration for the special missions or primary areas of emphasis at each of the institutions. The additional weightings have been judged to be **mission-sensitive,** and **responsive** to changing institutional workload and missions. The weights are reflective of changing missions of the institutions and relatively **simple to understand**, once the determination of what is a special mission or primary area of emphasis is debated through the necessary political processes.

Exhibit F-1 displays the Primary Emphasis Areas eligible for a 5 percent add-on weight or emphasis factor at each institution. Education is an emphasis area for all four institutions; Business for Boise State University and Lewis-Clark State College; and Engineering for the University of Idaho and Boise State University.

EXHIBIT F-1
PRIMARY EMPHASIS AREAS FOR EACH INSTITUTION

Emphasis Areas	Boise State	Idaho State	Lewis-Clark	U of Idaho
Agriculture				X
Architecture				X
Biological Sciences		X		
Business	X		X	
Criminal Justice			X	
Education	X	X	X	X
Engineering	X			X
Foreign Languages				X
Forestry				X
Health Professions		X		
Law				X
Mines				X
Nursing			X	
Performing Arts	X			
Physical Sciences		X		
Public Affairs	X			
Social Science	X			
Social Work			X	

RECOMMENDATION*:*

***Option 1*: Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation in much the same manner as now.**

***Option 2*: Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation. However, if all four institutions receive additional weights for one discipline such as Education, then the extra weighting should be incorporated into the overall weights.**

Both of these options continue the weighting for Primary Emphasis Areas specific to each institution's role and mission. The only difference is the exclusion of Education in an add-on category to reflect a unique mission. All four of the institutions emphasize Education, so *ceterus paribus,* a special weight does not need to be included except in the general list of weightings.

F.1.a.2. Weights by Discipline and Level

The Idaho weights vary by course level and by category of instructional discipline. The maximum weight given any category is 6.50 for graduate instruction in engineering, the health professions, and computer and information sciences. The weights and levels of instruction recognized in the Idaho mechanism are different from the weights and levels used by other states, and reported upon in the higher education literature.

Of particular importance is the lack of differentiation between masters' and doctoral level instruction. A large and well-documented body of research indicates that factors that are, for the most part, beyond the control of the institutions result in higher costs at the doctoral level over the masters' level. That same body of research suggests

that there is justification for including more than the four discipline differentiations currently recognized by Idaho.

The vast majority of states that utilize funding formulas for instruction recognize some type of differentiation by discipline or academic program (24 of 29 states). At the same time, it should be noted that each state that uses a formula for instruction utilizes a unique methodology. In fact, no two states rely on the same parameters for determining funding needs for their institutions of higher education.

A common problem faced by those states with large numbers of instructional cost categories in their funding formulas is the need to monitor the appropriateness of the classification of student credit hours by program or discipline. Formulas with too many program levels can create a temptation for institutions to assign their credit hour production to those program categories with the highest rate of reimbursement. The need to audit the correct reporting of student credit hour production exists in any enrollment-driven funding formula. However the problem grows exponentially with the level of differentiation.

In general, too much differentiation within the instructional component creates incentives for "gaming" the formula and leads to extra administrative expense in auditing enrollment reports and projecting future enrollment levels. For these and related reasons, some states (e.g., Florida) have refined their formulas in recent years to rely on a smaller number of cost categories in their instructional formula. Other states also are evaluating the use of simpler formulas. Idaho's use of only four cost categories would number the allocation method among those mechanisms that are simpler.

On the other hand, too few cost categories and too few levels does not provide sufficient differentiation to recognize legitimate differences in the costs of providing instruction in different disciplines or at different instructional levels within a discipline. When legitimate costs differences are not recognized, the level of equity within the

allocation methodology is reduced. A happy medium to this dilemma is to recognize enough different cost categories and levels so that institutions receive an equitable allocation but not so many that administrative overhead increases or institutions are "encouraged" to play games or manipulate the system.

Two options for modifying the weights are outlined below. These options attempt to strike the happy medium in determining weights.

RECOMMENDATION:

Option 1: **Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and 8 discipline categories to reflect more accurately legitimate differences in the costs of providing instruction across disciplines and levels.**

Option 2**: Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and the current 4 discipline categories.**

Option 1: Option 1 has the advantages of sufficient differentiation to reflect differences in costs, and thus would provide greater **equity** in the distribution of resources. In addition, Option 1 has the advantage of providing more resources for doctoral programs, and thus is **adequacy driven.** It is **goal-based and mission-sensitive** because it reflects the doctoral missions of the institutions and reinforces the broad goals for the state as expressed in the mission statements by recognizing and providing different amounts of resources for differences in degree levels and program offerings. On the other hand, this method is not as **simple to understand and administer** as the current method, or Option 2; and will require additional monitoring of the institutions to ensure that the numbers are **valid and reliable.**

In his meta-analysis of the discipline costs of instruction, Brinkman found that upper division costs were, on average, 1.6 to 1.8 times as much as lower division instruction. Masters' level was 4 to 5 times as much; and doctoral education was 8 to 9 times the cost of lower division instruction. Differentiating by an additional level and by more cost categories will reflect actual differences in the costs of providing instruction in varying disciplines and at the doctoral level.

Option 2: Option 2 shares some of the positive benefits of Option 1 and has the advantage of providing more resources for doctoral programs, and thus is **adequacy driven;** it is **goal-based and mission-sensitive** because it reflects the doctoral missions of the institutions and reinforces the broad goals for the state as expressed in the mission statements by recognizing and providing different amounts of resources for differences in degree levels. Option 2 is not as **simple to understand and administer** as the current method, because of the addition of one more level, but is simpler than Option 1. Option 2 also has the advantage of being "known" by the Board, legislators, and the governor's office because the discipline groupings remain the same. On the other hand, Option 2 does not differentiate as well as Option 1, and therefore, does not provide as much **equity** in the allocation of resources.

The trade-off between these two options is the balance between equity and simplicity: if the weighting system is simple, then vertical equity is reduced. If the weights are more complex to recognize differences between the institutions, then the system is not simple.

In either case of Option 1 or Option 2, the weights to be included should be based on national data, not Idaho data. Idaho does not have a recent cost study that would guide the selection of weights. National data suggest that there are reasons beyond the control of the institutions that impact on the costs of providing instruction in different academic disciplines and which merit distinction in funding levels.

National data and literature also suggest that there are differential costs related to the level of the student enrolled in programs, as was indicated by Brinkman's study. The initial result of Option 1 or 2 is a matrix of weights that is shown as Exhibit F-2. The matrix provides the current Idaho weights as well as the weights for Options 1 and 2 to facilitate comparisons. Further analysis of the appropriateness of the weights for Idaho needs to be completed. Use of this matrix to specify costs among disciplines and levels enables Idaho to recognize legitimate differences in costs among disciplines and levels and targets greater funding to doctoral programs.

The weights used by Idaho are within the range of the other states at the lower and upper division levels, but tend to be higher at the masters' level and lower at the doctoral level. This may be due to the fact that Idaho recognizes only "graduate" instruction as opposed to having separate masters' and doctoral levels.

EXHIBIT F-2
CURRENT IDAHO DISCIPLINE WEIGHTS AND OPTIONS FOR WEIGHTS BY DISCIPLINE

CIP		LOWER DIVISION			UPPER DIVISION			MASTERS			DOCTORAL		
Code	Discipline	Current Idaho	Option 1	Option 2	Current Idaho	Option 1	Option 2	Current Idaho	Option 1	Option 2	Current Idaho	Option 1	Option 2
1	Agriculture Business & Production	1.60	1.85	1.60	2.50	2.20	2.50	6.00	4.57	4.57	6.00	15.40	13.03
2	Agricultural Science	1.60	1.85	1.60	2.50	2.20	2.50	6.00	4.57	4.57	6.00	15.40	13.03
3	Conservation & Renew Natural Resources	1.60	1.85	1.60	2.50	2.20	2.50	6.00	4.57	4.57	6.00	15.40	13.03
4	Architecture & Related Programs	1.60	2.60	1.60	2.50	2.50	2.50	6.00	4.57	4.57	6.00	17.10	17.10
5	Area, Ethnic & Cultural Studies	1.30	1.00	1.30	1.90	1.67	1.90	3.50	3.63	3.27	3.50	10.33	9.62
9	Communications	1.30	1.00	1.30	1.90	1.67	1.90	3.50	3.23	3.27	3.50	10.33	9.62
11	Computer & Information Science	1.60	1.85	1.60	2.50	1.90	2.50	6.00	4.95	4.57	6.00	7.95	7.95
11	Computer & Information Science	1.30	1.85	1.30	2.50	1.90	2.50	3.50	4.95	4.57	3.50	7.95	7.95
13	Education	1.30	1.15	1.30	1.90	1.90	1.90	3.50	2.60	3.27	3.50	8.62	7.95
13	Physical Education	1.00	1.15	1.00	1.50	1.50	1.50	3.50	2.60	3.27	3.50	8.62	7.95
14	Engineering	3.00	2.50	3.00	3.50	2.73	3.50	6.50	6.14	6.17	6.50	13.90	13.03
16	Foreign Language & Literature	1.60	1.00	1.60	2.50	2.20	2.50	6.00	3.63	3.27	6.00	9.62	9.62
19	Home Economics	1.30	1.50	1.30	1.90	1.90	1.90	3.50	3.15	3.27	3.50	7.95	7.95
22	Law & Legal Studies	1.00	1.20	1.00	1.50	1.67	1.50	2.60	2.80	2.80	2.60	2.80	2.80
23	English Language & Literature/Letters	1.00	1.00	1.00	1.50	1.67	1.50	3.50	3.27	3.27	3.50	9.80	9.62
24	L A & Science/Gen'l Studies & Humanities	1.30	1.00	1.30	1.90	1.67	1.90	3.50	3.27	3.27	3.50	9.80	9.62
25	Library Science	1.00	1.20	1.00	1.50	1.67	1.50	3.50	3.63	4.17	3.50	9.62	9.62
26	Biological Sciences/Life Sciences	1.60	1.50	1.60	2.50	2.73	2.50	6.00	6.14	6.17	6.00	13.03	13.03
27	Mathematics	1.00	1.00	1.00	1.50	1.67	1.50	3.50	3.27	3.27	3.50	7.95	7.95
29	Military Technology	1.00	1.00	1.00	1.50	1.50	1.50						
30	Multi/Interdisciplinary Studies	1.30	1.00	1.30	1.90	1.67	1.90	3.50	3.27	3.27	3.50	8.62	9.62
31	Parks, Recreation, Leisure & Fitness	1.00	1.00	1.00	1.50	1.67	1.50	3.50	3.27	3.27	3.50	9.62	9.62
38	Philosophy & Religion	1.00	1.00	1.00	1.50	1.67	1.50	3.50	3.27	3.27	3.50	8.62	9.62
40	Physical Sciences	1.60	1.50	1.60	2.50	2.73	2.50	6.00	6.14	6.14	6.00	15.40	13.03
42	Psychology	1.00	1.00	1.00	1.50	1.50	1.50	3.50	3.15	3.27	3.50	9.62	9.62
43	Protective Services	1.30	1.00	1.30	1.90	1.67	1.90	3.50	3.27	3.27	3.50	9.62	9.62
44	Public Administration & Service	1.30	1.00	1.30	1.90	1.90	1.90	3.50	3.27	3.27	3.50	9.62	9.62
45	Social Science & History	1.00	1.00	1.00	1.50	1.90	1.50	3.50	3.27	3.27	3.50	9.62	9.62
46	Construction Trades	1.00	1.47	1.00	1.50	2.73	1.50	3.50	4.95	4.57	3.50	9.62	9.62
50	Visual and Performing Arts	1.60	2.00	1.60	2.50	2.50	2.50	6.00	4.95	4.57	6.00	17.10	17.10
50	Visual and Performing Arts	1.60	2.00	1.60	2.50	2.50	2.50	6.00	4.95	4.57	6.00	17.10	17.10
51	Health Professions & Related Sciences	3.00	3.15	3.00	3.50	3.50	3.50	6.50	6.14	6.17	6.50	13.90	13.03
52	Business Management & Admin Services	1.30	1.15	1.30	1.90	1.67	1.90	3.50	3.63	3.27	3.50	17.10	17.10
-	Developmental/Basic Skills		2.00	2.74									

F.1.b. Use of the rolling three year average

The Idaho State Board of Education policy on workload adjustments states that "A three-year moving average of credit hours multiplied by the program weights shall be used. The three (3) years to be used shall be those which precede the year of the allocation and shall consist of two (2) years of actual and one (1) year of estimated credit hours."

The three-year rolling average provides a buffer for institutions when enrollments are declining. From a state perspective, rolling average workload measures are **size-sensitive** in that a rolling average considers economies of scale, and the changes in workload that are reflected in marginal costs. The three-year rolling average is not in itself dis-equalizing. However, the application of the rolling average in Idaho does introduce inequities that are discussed in the next section.

F.1.c. Funding of only a Portion of the Workload Adjustment

The Idaho State Board of Education policy related to the workload adjustment states that "The total budget base of the institutions shall be multiplied by 0.33 and divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution."

This calculation has the effect of funding only **one-ninth** of any changes in enrollment or workload in any one year because it is done as part of the rolling three-year average applied to one-third of the institutions' budgets. This adjustment over time introduces **inequity** into the base, and is responsible for a significant portion of the loss in the equity of the allocation methodology since 1991.

Although this calculation may have been introduced at one point to reflect the marginal costs of additional enrollments, there are other methods of reflecting marginal costs in the base that are not dis-equalizing. In fact, Idaho already does so by making adjustments to a base level of funding.

RECOMMENDATION:

Change the Board policy on the rolling three-year average to the following: "The total budget base of the institutions shall be divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution."

This one small change will provide a significant improvement in the **adequacy and equity** in the calculation of the workload adjustment.

F.1.d. Exclusion of Professional/Technical Education and Other Programs

Although the Idaho State Board of Education is responsible not only for general higher education but also for professional/technical education and agricultural/research/special programs, the allocation of resources to institutions that provide general higher education, agricultural/research/special programs, and professional/technical education is not coordinated. Boise State University, Idaho State University, and Lewis-Clark State College all provide both general higher education and professional/technical education. Each of the four institutions also has special programs that are funded through special allocations.

The institutions receiving funding for professional/technical education (including the veterinary medicine and medical education programs at the University of Idaho) do so through a separate allocation from the State Board. The allocation may be intended

to cover the costs of these students, but actually provides funding for the instructional components. Because professional/technical and medical/veterinary students are not counted in the workload adjustment, certain additional costs such as registering, providing student services, and maintaining facilities for the vocational/technical students are not included in the general institutional allocations. In addition, having two separate "programs" introduces a level of complexity into institutional planning. Each president should be able to coordinate, plan, and budget in a coordinated fashion for all of the missions of the institution.

When evaluated by the guiding principles or criteria, the exclusion of these students is **dis-equalizing, not mission-sensitive, and inadequate.** It also is not **simple to understand.**

RECOMMENDATION:

Continue to allocate funds for the instructional requirements of professional/technical students (including medical and veterinary students) through the current and separate methodology.

None of the institutions questioned or suggested that the instructional needs of professional/technical or veterinary/medical students were not being met by the allocation for these students. However, the burden that these students place on the remaining parts of the university community is funded inadequately. In addition, the special resource requirements for agricultural research and extension and research programs are not considered in the current funding mechanism.

RECOMMENDATION:

Count professional/technical and veterinary/medical students in all components of the allocation mechanism, except instruction.

This recommendation provides improvements for the non-instructional requirements of professional/technical and veterinary/medical students, permits coordinated planning, and provides additional **equity and adequacy** to the allocation mechanism.

F.1.e. Treatment of non-resident students.

Non-resident full-fee paying students are not included in the workload calculations of the allocation methodology. This provision on the face appears to be consistent with the policy of non-resident students paying for all their educational costs so as not to be a burden on Idaho taxpayers.

As the policy is operationalized in Idaho, however, it is susceptible to institutional manipulation and fails the criterion **reliant on valid and reliable data.** (Note: Being susceptible to institutional manipulation does not mean nor imply that Idaho institutions are in any way manipulating the data.) Under current policy, if a non-resident student is not paying full non-resident fees, then that non-resident student may be counted in the workload of the institution. Students may be given partial waivers of fees, and thus, would be counted in the allocation methodology. This implies that the policy also does not meet the **incentive-based** criterion since there is what could be called an inappropriate incentive for institutional behavior. An institution could provide a $100 fee waiver so that a non-resident student would be included in workload counts.

Each of the four senior institutions has varying abilities to provide waivers or other financial aid to non-resident students. Because no consideration is given to the institutions' ability to provide waivers, the practice of not counting full-pay, non-resident students is **dis-equalizing.**

Almost all other states count non-resident students and the credit hours earned by non-residents in the funding and allocation methodologies. Among the reasons cited for

doing this is the complexity added to student accounting systems and credit hour databases to differentiate the hours earned by non-residents. If non-resident students are to be excluded from student counts, additional monitoring and auditing is required to ensure that student counts are accurate.

In addition, states implicitly recognize the benefits derived from non-resident student enrollment. Non-resident students introduce diversity to the student body, and provide real economic benefits to the community, campus, and state. Several economic impact studies have placed the non-resident student's economic value or return on investment for state appropriations at four to six times the cost of instruction or appropriations per student.

RECOMMENDATION:

***Option 1*: Count all credit hours earned by non-resident students in the workload adjustment as is done now for those non-resident students who do not pay full fees.**

***Option 2:* Count credit hours earned by non-resident students who are receiving a full or partial waiver of fees. Limit the number of full-time equivalent student waivers to a specific percentage of the student body and the total dollar amount of waivers to a specific percentage of tuition revenues.**

Option 1 recognizes that the State of Idaho benefits both economically and socially from the enrollment of non-resident students, and thus, should shoulder some of the costs of that enrollment. This option removes the opportunity for game-playing in the inclusion or exclusion of non-residents, and levels the playing field by creating equal opportunities for each institution to benefit from non-resident student enrollment. On the down side, there will have to be some trade-off made for the additional revenues that are earned from non-residents so that the inclusion of the students does not disadvantage

institutions who are not able to attract as great a proportion of non-residents as the other Idaho institutions can. Other states handle this problem by subtracting out of the state allocation a proportion of out-of-state student revenues; MGT was not able to evaluate the impact of this recommendation because no data on non-resident full-fee paying students, or partial pay students, were available.

Option 2 has the advantage that it continues the practice of excluding full-pay non-resident students, and thus, appears on the face to conform to a state policy of no state dollars for these students. Option 2 levels the playing field among the four institutions so that the natural advantages of an institution being close to a state border or having other advantages are equalized. On the other hand, Option 2 has the disadvantage of requiring continual monitoring of not only non-resident student counts, but also the counts and amounts of waivers. This complexity may be perceived to be sufficient to offset its benefits.

F.2. Operations and Maintenance Funds

Each of the four senior higher education institutions have been allocated funds for the operation and maintenance of new Educational and General capital improvement projects over the time period FY 1991 to FY 2001. Operation and maintenance funds for all other general education buildings on the campuses are in the base budgets. The calculation used by Idaho for this component of the allocation introduces ***horizontal equity*** factors, is ***adequacy-driven, size-sensitive, responsive, adaptable to economic conditions,*** and ***reliant on valid and reliable data.*** Horizontal equity is addressed by providing the same amount per gross square foot of new space; adequacy is introduced by providing an amount that is based on amounts spent across the state to maintain and operate these buildings. This calculation is size-sensitive in that it

considers the size of the buildings; because the calculation is based on an accurate count of square footage, it meets the valid data criterion.

No changes are recommended for this component.

F.3. Decision Units

Over the time period FY 1991 to FY 2001 the State Board of Education made a number of above-the-base-budget allocations that were related to items such as salary increases and other cost-of-living adjustments. These adjustments have been called "General Allocations" and were allocated "based on the proportionate share of each institution in the total budget request for these decision units applied to the increase in appropriations above the base, excluding special allocations" by Board policy.

This component of the allocation methodology does address the **adequacy** issue by striving to provide additional resources to the institutions. In addition, this component is **adaptable to economic conditions, simple to understand, flexible, size-sensitive, and provides vertical equity.**

No changes are recommended for this component of the allocation.

F.4. Special Allocations

Over the eleven year time period FY 1991 to FY 2001 the State Board of Education made a number of special allocations for items that are of particular interest to the Board. Items that have been included in the special allocations vary from classroom technology grants that were distributed in equal amounts to each college and university to items such as the Masters of Social Work Program at Boise State University, to the HOIST program at the University of Idaho to a special request from ISU.

Each of these allocations fulfill the criteria **mission-sensitive**, **goal-based, and adaptable to special situations.** However, these allocations tend to be dis-equalizing because they do not provide any resources based on any equity measure.

RECOMMENDATION:

When special allocations are made to more than one of the institutions for the same purpose (such as technology grants), distribute funds to the institutions in proportion to the enrollment, number of staff members, size of budget, or other measure of workload related to the special allocation.

Introduction of some method of distribution that relates workload to the special allocation contributes to the **equity** of the distribution.

F.5. Base Allocation

The base comprises by far the largest portion of the allocation to the four senior institutions in Idaho. Each year in the allocation process each of the four institutions begins with its allocation of the prior year, from which or to which all adjustments are made. In FY 1990 an equity adjustment was made to the Boise State University budget to bring funding up to a par with the other three institutions. However, as the discussions in Section E and in the following sections enumerate, adjustments to the base in the 11 years since FY 1990 have been dis-equalizing. Therefore, this section will address recommendations to return the base to an equitable distribution of resources.

Funding that uses a base of the prior year's allocation, with adjustments to reflect changes in workloads, state policy, priorities, needs, and costs-of-living, is by far the most common method of allocating resources to higher education institutions (and other parts of state government). This method is very easy for legislators and other policy-makers to understand. On the other hand, it is difficult to correct the base allocations when inequities occur, and to keep the base allocation equitable over time.

F.5.a. Analyses of Funding Levels

In Phase I, several analyses were completed to determine that funding was not equitable: a comparison to peer revenues and expenditures, and a comparison to

comparator revenues and expenditures; and to evaluate how far from an equitable distribution of resources the Idaho institutions were. The first analysis comparing funding for the Idaho institutions to their peers is summarized in Exhibit F-3.

When compared to their peer institutions, the Idaho institutions received on average about the same appropriations (including tuition and similar revenues) per FTE student as did their peers. Appropriations per FTE student were 96.6 percent of the peer average for Boise State University, 97.2 percent for the University of Idaho, 100.7 percent for Lewis-Clark State College, and 101.2 for Idaho State University. When compared on a student headcount basis, appropriations per headcount varied from 90.2 percent of the peer average for Lewis-Clark State College, 90.7 percent for Boise State, 93.7 percent for University of Idaho, and 101.9 percent for Idaho State.

Because there are many reasons why funding for the peer institutions could be greater (or less) than funding at the Idaho institutions, a second analysis was completed that simulated funding for the Idaho institutions using a funding model that is considered to have incorporated many best practices of funding or allocation mechanisms. The South Carolina funding model, called the Mission Resource Requirement (MRR) model, was used to evaluate the funding at the Idaho institutions. Exhibit F-4 displays the results of that analysis, using data currently used in the Idaho allocation mechanism including credit hours by discipline.

The South Carolina model calculates a resource "need" for each college or university that is funded by a combination of state resources and institutional resources such as tuition and fees, and other unrestricted institutional income such as indirect cost recoveries. The MRR is made up of seven components that are the basic expenditure categories for higher education: instruction, research, public service, libraries, administration, student services, and physical plant. The instruction component is based on credit hours generated in more than 50 academic disciplines, differentiated by five

levels, and by the mission or type of the institution. A rolling three-year average student enrollment is used, like Idaho's three-year average. Credit hours are converted to full-time student equivalencies by level, and then differential student-faculty ratios are applied to derive the requisite number of faculty. Faculty salaries rates are then applied to the resultant number of faculty, by discipline, and a factor added on for operating costs.

EXHIBIT F-3
COMPARISONS OF FY 1999 UNRESTRICTED REVENUES PER STUDENT
IDAHO INSTITUTIONS AND THEIR PEERS

	Tuition & Fees	State Appropriations	E & G Revenues	Tuition; State and Local Appropriations
Average per FTE, BSU Peers	3,780	6,015	10,540	9,795
BOISE STATE UNIVERSITY	3,436	6,030	10,180	9,466
BOISE STATE AS A % OF PEER AVERAGE	90.9%	100.2%	96.6%	96.6%
Average per FTE, ISU Peers	3,798	6,388	11,833	10,186
IDAHO STATE UNIVERSITY	3,464	6,848	11,121	10,312
AS A % OF PEER AVERAGE	91.2%	107.2%	94.0%	101.2%
Average per FTE, LCSC Peers	3,283	5,554	9,560	8,836
LCSC	2,604	6,292	9,835	8,896
LCSC as a % of peer average	79.3%	113.3%	102.9%	100.7%
Average per FTE, UI Peers	4,170	8,431	15,000	12,617
UNIVERSITY OF IDAHO	3,924	8,345	13,947	12,268
UI as a % of peer average	94.1%	99.0%	93.0%	97.2%
Average per FTE Student, All Peers	3,911	7,066	12,629	10,983
Average, Idaho Institutions	3,528	6,973	11,543	10,501
Idaho as a % of peer average	90.2%	98.7%	91.4%	95.6%
Average per Headcount, BSU Peers	2,753	4,381	7,677	7,134
BOISE STATE UNIVERSITY	2,349	4,123	6,961	6,472
BOISE STATE AS A % OF PEER AVERAGE	85.3%	94.1%	90.7%	90.7%
Average per Headcount, ISU Peers	2,935	4,937	9,146	7,873
IDAHO STATE UNIVERSITY	2,695	5,328	8,652	8,023
AS A % OF PEER AVERAGE	91.8%	107.9%	94.6%	101.9%
Average per Headcount, LCSC Peers	2,749	4,652	8,008	7,401
LCSC	1,954	4,723	7,381	6,677
LCSC as a % of peer average	71.1%	101.5%	92.2%	90.2%
Average per Headcount Student, UI Peers	3,556	7,189	12,790	10,758
UNIVERSITY OF IDAHO	3,225	6,858	11,462	10,083
UI as a % of peer average	90.7%	95.4%	89.6%	93.7%
Average per Headcount Student, All Peers	3,106	5,611	10,030	8,723
Average, Idaho Institutions	2,656	5,251	8,692	7,907
Idaho as a % of peer average	85.5%	93.6%	86.7%	90.7%

EXHIBIT F-4
SOUTH CAROLINA FUNDING MODEL APPLIED TO THE IDAHO INSTITUTIONS

FUNDING COMPONENT:	BSU	ISU	LCSC	UI
Research	2,023,158	2,344,978	100,141	12,001,740
Public Service	756,208	816,246	269,268	3,470,461
Libraries	7,234,149	5,566,942	688,731	5,862,575
Student Services	11,668,030	9,134,717	2,193,249	8,281,447
Administration	22,910,257	19,883,389	3,605,599	25,620,897
Physical Plant	13,120,060	14,268,338	2,113,033	18,411,264
Subtotal	57,711,862	52,014,611	8,970,020	73,648,383
Add: Instruction	56,839,425	47,402,335	9,057,973	54,456,103
Total E & G Funding Requirement	114,551,287	99,416,946	18,027,994	128,104,486
State General	66,494,200	57,446,700	10,141,400	77,479,200
Endowment	0	3,063,000	1,851,200	8,097,200
Student Fees	19,774,900	16,269,900	3,584,100	19,892,000
Total	86,269,100	76,779,600	15,576,700	105,468,400
Total Appropriations as a % of Formula	75.31%	77.23%	86.40%	82.33%

Research needs are calculated as 30 percent of the prior year's sponsored research expenditures, and public service as 15 percent of sponsored public service expenditures. These calculations do not differentiate explicitly by type of institution or mission, but do so implicitly since an institution with a large public service mission will have more expenditures. Library and student services amounts are calculated as the average amount expended by similar institutions in a prior year, times the number of headcount or full-time equivalent students. Administration is calculated at 25 percent of the first five calculations. Physical plant needs are determined by a series of calculations that differentiate by type of building, construction, and air-conditioning.

The South Carolina MRR model incorporates many of the best practices that were enumerated in Section C, and has been judged to meet all of the criteria or guiding principles. The MRR is used here to provide another relative picture of the funding at the Idaho institutions. It is not meant to imply that this model should be used in Idaho.

All of the Idaho institutions received less funding from a combination of state resources and tuition revenues than the MRR model calculated as their "needs" or "requirements" to provide services for their diverse clients. BSU received 75.3 percent of the resource need, ISU 77.2 percent, UI 82.3 percent, and LCSC 86.4 percent. If the MRR were to be the allocation method used by the State Board to distribute funds to the institutions, an additional $76 million would be required from a combination of state appropriations, endowment funds, and student fees and miscellaneous revenues. To bring all institutions to the level of funding of the "best funded" of the four institutions (LCSC) would require an additional $27 million.

This analysis was completed to provide a benchmark against which to evaluate a model for calculating an equitable base funding level for each of the four senior institutions. The multiple analyses will serve to calibrate Idaho funding on any model that is developed.

F.5.b. Base Funding Model

In prior sections, it was determined that the major cause of inequity in the current allocation mechanism is the base budget of each of the institutions. For any funding mechanism to be equitable, and to achieve the other criteria for an optimal allocation methodology, the base itself must be equitable. Therefore, a new base budget must be calculated for each of the four senior institutions.

RECOMMENDATION:

A new base should be calculated based on "best practices," the guiding principles or criteria for an allocation model, and using the recommendations for weights and the three-year rolling average of student counts enumerated above. In future years, this calculated amount should be the base to which or from which adjustments are made. The base amount should be phased in over three years.

In Phase I, the study analysis determined that the allocation of resources to the Idaho institutions was inequitable. That determination was based on comparisons of revenues to the revenues at peer institutions and to revenues at comparator institutions. The analysis also compared funding among the Idaho institutions using weighted student credit hours, two measures of full-time equivalent students, and headcount students. In all cases, funding was not equitable. Then, in Phase II, expenditures at the Idaho institutions were compared to expenditures at the peers and at comparator institutions, with a finding again that funding was not equitable. As a third point of comparison, funding for the Idaho institutions was compared to what would be generated using another state's funding model. The funding model used is one that has been designated as incorporating best practices, and providing equity in funding. Again, under this third method of looking at funding equity, the Idaho institutions were not receiving an equitable distribution of resources.

To determine what the base funding for each of the Idaho senior institutions ought to be to provide an equitable allocation of resources, all of the recommendations from the prior section were incorporated into two **SUGGESTED** funding models (using the two alternative weightings for student credit hours recommended as a change to the workload adjustment). The suggested funding models can be used to calculate a base to which adjustments can be made in future years, using the State Board of Education's current mechanism (with the recommended improvements). The following paragraphs will describe step by step the calculation of a base funding amount using these models.

It should be emphasized that the models are presented as concepts for the Board's consideration. During the next few months, the universities and Board staff will need to work with the consultants to calibrate and fine tune the model for presentation to the Board at its August meeting.

F.5.b.1. Instruction

Instruction is the largest component of institutional budgets, and is critical to the equitable allocation of resources. In the recommendations made earlier that relate to adjustments to the base budgets, several are components of the instruction calculation of the base: weights by discipline and level, and primary emphasis area weights, rolling three-year average and full counting of the average, and inclusion of non-resident students. Data were not available to simulate the impact of counting of non-resident students. Before any base model or recommendations are adopted by the Board, simulations using counts of non-resident credit hours must be completed to evaluate the impact of inclusion.

For easy understanding the recommendations that were included in the simulations are listed below in each step of the calculation.

STEP 1: Weights for academic discipline and level: The options were:

Option 1: **Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and 8 discipline categories to reflect more accurately legitimate differences in the costs of providing instruction across disciplines and levels.**

Option 2**: Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and the current 4 discipline categories.**

To operationalize this recommendation into the base amount, a matrix of credit hour weights (shown in Exhibit F-2) was multiplied by the credit hours reported to the Board for FY 1998, FY 1999, and FY 2000, the last years for which actual credit hour data were available. Since the credit hours were reported by discipline for lower division, upper division, graduate, and first professional levels, graduate credit hours were allocated to masters and doctoral levels by an algorithm that related the number of

doctoral degrees awarded to total graduate degrees. The allocation was necessary because the institutions do not report credit hours differentiated into masters and doctoral levels. **If the Board adopts one of the recommendations related to credit hour weights for the workload adjustment, institutions will be required to report credit hours by masters and doctoral levels.**

STEP 2: Primary emphasis area weights: The optional recommendations were:

Option 1: **Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation in much the same manner as now.**

Option 2**: Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation. However, if all four institutions receive additional weights for one discipline such as Education, then the extra weighting should be incorporated into the overall weights.**

For purposes of the simulations, either Option 1 or 2 is operationalized the same by including special weights for each college or university as add-ons to the weighted credit hours calculated in step one.

STEP 3: Calculation of the Rolling Three-Year Average: The recommendation related to the average is:

Change the Board policy on the rolling three-year average to the following: "The total budget base of the institutions shall be divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution."

Because this calculation is being made to determine the base, all credit hours, not just changes to credit hours to recognize differences in workload, were included. To derive the rolling three-year average of credit hours for the simulations, the unweighted credit hours reported to the Board were included in a matrix and the simple average by level calculated. The weights then were applied to the average of credit hours by level and discipline.

STEP 4: Calculation of the Value of One Weighted Credit Hour:

Once the number of weighted credit hours was determined, the total of weighted credit hours had to be multiplied by a base amount to derive an example of the instructional funding amount. National data from the IPEDS Financial Survey were used in regression analyses to determine if a value could be obtained. In addition, the base values used by other states in their funding formulas were evaluated for their applicability to a calibration for Idaho. Base values used by other states are displayed in Exhibit F-5.

EXHIBIT F-5
VALUE OF ONE WEIGHTED CREDIT HOUR

STATE	VALUE
Alabama	$ 57.64
Arkansas	68.00
Georgia	53.25
Kentucky	73.25
Ohio	70.93
Oklahoma	47.43
South Carolina	53.09
Texas	55.32
Virginia	75.00

From the examination of all of these data, $61.55 was selected as the base value for one weighted credit hour to be used in this simulation of the impact of a base funding calculation. Exhibit F-6 displays the three-year average weighted credit hours for each of the four Idaho senior institutions, and the total instruction amount.

EXHIBIT F-6
WEIGHTED CREDIT HOURS AND INSTRUCTION FUNDING AMOUNTS
BASE FUNDING SIMULATIONS

	Weighted Credit Hours		Instruction Amount	
	Option 1	Option 2	Option 1	Option 2
BSU	716777.4	597454.5	44,117,652	36,773,322
ISU	607444.2	529057.2	37,388,189	32,563,472
LCSC	101841.9	88159.19	6,268,369	5,426,198
UI	662517.2	602487.3	40,777,935	37,083,095
total	2088581	1817158	128,552,144	111,846,087

F.5.b.2. Research

Inclusion of an amount for research recognizes differences in the missions of the institutions and is an important factor in providing an equitable amount of funding for each of the institutions. For simulation of the base amount to be included for Research, 35 percent of sponsored research funding for the last actual year (FY 2000) was included. The research percentage in this simulation was derived from examination of best practices and provides "seed money" to assist the institutions in carrying out their research missions. Amounts generated by this component are displayed in Exhibit F-7.

EXHIBIT F-7
RESEARCH COMPONENT OF THE
SIMULATION OF BASE FUNDING

INSTITUTION	FUNDING CALCULATION	
	Sponsored Research	Amount
Boise State University	$ 6,743,860	$ 2,360,351
Idaho State University	7,816,594	2,735,808
Lewis-Clark State College	333,802	116,831
University of Idaho	40,005,800	14,002,030

F.5.b.3. Public Service

Inclusion of an amount for public service recognizes differences in the missions of the institutions and is an important factor in providing an equitable amount of funding for each of the institutions. For simulation of the base amount to be included for Public

Service activities, 20 percent of sponsored public service funding for the last actual year (FY 2000) was included. The Public Service simulated allocation was derived from examination of best practices and provides "seed money" to assist the institutions in carrying out their service missions. Amounts that would be generated by this component are displayed in Exhibit F-8.

EXHIBIT F-8
PUBLIC SERVICE COMPONENT OF THE
SIMULATION OF BASE FUNDING

INSTITUTION	FUNDING CALCULATION	
	Sponsored Public Service	Amount
Boise State University	$ 3,034,832	$ 604,966
Idaho State University	3,264,984	652,997
Lewis-Clark State College	1,077,073	215,415
University of Idaho	13,881,843	2,776,369

F.5.b.4. Academic Support and Student Services (Support Services).

Academic support and student services have been grouped together in one calculation. Analysis of regression equations on national data did not support separate calculations for each area. Use of only one calculation increases the simplicity and does not sacrifice any explanatory power related to the differences among the institutions. It was posited that these support programs each had a different set of cost "drivers" and that there ought to be separate formula calculations. However, the national data did not support the contention of separate cost drivers (or factors that explain the differences in expenditures between institutions). There was evidence, however, related to economies of scale for institutions below 4,000 headcount students. National data indicate that break points related to economies of scale for the support programs occur at 4,000 headcount students.

The headcount data in this calculation include professional and technical students, and incorporate the rolling three-year average. From the regression analysis on national data, the following equation was derived for calculating support costs:

Support costs = $ 1,755 per headcount student up to 4,000 students plus $1,400 per headcount student over 4,000

EXHIBIT F-9
SUPPORT PROGRAMS (ACADEMIC SUPPORT and STUDENT SERVICES) COMPONENT OF THE SIMULATION OF BASE FUNDING

INSTITUTION	FUNDING CALCULATION	
	Headcount Students	Amount
Boise State University	16,145	$24,023,000
Idaho State University	12,640	19,116,000
Lewis-Clark State College	2,828	4,963,140
University of Idaho	11,459	17,462,600

F.5.b.5. Institutional Support

The institutional support component of the base funding amount was calculated as a percentage of the prior steps. National data support the contention that there are certain economies of scale related to institutional support, and that there also are economies and diseconomies of scope. The calculations for support programs include a recognition of economies of scale; the equations for research and public service activities do not include economies of scale factors in recognition of the diseconomies of scope that occur when campuses have more complex research and service missions. Therefore, a calculation for institutional support that is derived as a percentage of the prior calculations implicitly includes economies of scale factors as well as consideration for the diseconomies of scope. The percentage was calibrated off national data and best practices.

The calculation for institutional support is:

Institutional support = 20% of the amounts for instruction, research, public service, and support programs (academic support and student services) for those institutions with less than $25,000,000 in sponsored research funding
And
Institutional support = 25% of the amounts for instruction, research, public service, and support programs (academic support and student services) for those institutions with more than $25,000,000 in sponsored research funding

EXHIBIT F-10
INSTITUTIONAL SUPPORT COMPONENT OF THE SIMULATION OF BASE FUNDING

Institutional Support:	Boise State	Idaho State	Lewis-Clark	U of Idaho
Option 1	14,221,194	11,978,599	2,312,751	18,754,733
Option 2	12,752,328	11,013,655	2,144,317	17,831,024

F.5.b.6. Physical Plant

Physical plant is one area where there are significant differences among the institutions in the age, value, and size of the physical plant. Regression analysis was completed on national data to determine the equation for the physical plant component of the base allocation. The regression equation developed from national data is the following:

> Plant Needs = $375,000 + $400 per rolling three-year average headcount student + $180 per FTE staff + $2.35 times GSF + 1.2% of E&G replacement value.

This formula recognizes that there are certain economies of scale in the operation and maintenance of the physical plant, which are reflected in the formula by the $375,000. The percentage of replacement value represents the amount that is required for building renewal and replacement. Amounts generated for the physical plant component of the simulation of the base are displayed in Exhibit F-11.

EXHIBIT F-11
PHYSICAL PLANT COMPONENT OF THE BASE ALLOCATION

	Headcount	FTE employees	GSF	Replacement Value	Base	Total
Counts:						
BSU	16,145	1116.26	1,636,299	287,054,156	375,000	
ISU	12,640	1005.33	1,911,940	232,999,116	375,000	
LCSC	2,828	231.22	398,971	41,191,643	375,000	
UI	11,459	1277.41	2,406,193	442,359,765	375,000	
Times	400	180	2.35	0.012		
Formula Values:						
BSU	6,458,000	200,927	3,845,303	3,444,650	375,000	14,323,879
ISU	5,056,000	180,959	4,493,059	2,795,989	375,000	12,901,008
LCSC	1,131,200	41,620	937,582	494,300	375,000	2,979,701
UI	4,583,600	229,934	5,654,554	5,308,317	375,000	16,151,405

F.6. Summary

Recommendations were made for improvements in each of the components of the current Idaho funding mechanism including a new base that would provide equity for each of the institutions.

RECOMMENDATION 1*: Primary Emphasis Area Weights*

Option 1: **Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation in much the same manner as now.**

Option 2**: Additional weights to recognize special missions or primary areas of emphasis at each of the institutions should continue to be included in the calculation. However, if all four institutions receive additional weights for one discipline such as Education, then the extra weighting should be incorporated into the overall weights.**

Adoption of either of these options maintains a component of the calculation that meets the "mission-sensitive" and "adaptable to special situations" criteria or characteristics of a good allocation model.

RECOMMENDATION 2: *Weightings by Level and Discipline:*

***Option 1*: Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and 8 discipline categories to reflect more accurately legitimate differences in the costs of providing instruction across disciplines and levels.**

***Option 2*: Differentiate the credit hour weights by 5 levels (lower division, upper division, masters, doctoral, and professional) and the current 4 discipline categories.**

Either of these options increase the equity of the distribution by recognizing legitimate cost factors in the production of student credit hours.

RECOMMENDATION 3: *Rolling Three-Year Average:*

Change the Board policy on the rolling three-year average to the following: "The total budget base of the institutions shall be divided by the three-year moving average of total weighted credit hours for the prior year. The resultant amount per credit hour shall be multiplied by the change from the prior three-year moving average of weighted credit hours for each institution to calculate the adjustment by institution."

Adoption of this recommendation will increase both the adequacy and equity of the allocation mechanism.

RECOMMENDATIONS 4 and 5*: Professional/Technical Students:*

RECOMMENDATION 4:

Continue to allocate funds for the instructional requirements of professional/technical students through the current and separate methodology.

RECOMMENDATION 5:

Count professional/technical students in all components of the allocation mechanism, except instruction.

When taken together, these two recommendations will increase the equity of the allocation, provide for coordinated planning, and recognize the additional costs of providing services to professional/technical students.

RECOMMENDATION 6: *Non-resident students:*

***Option 1*: Count all credit hours earned by non-resident students in the workload adjustment as is done now for those non-resident students who do not pay full fees.**

***Option 2*: Count credit hours earned by non-resident students who are receiving a full or partial waiver of fees. Limit the number of full-time equivalent student waivers to a specific percentage of the student body and the total dollar amount of waivers to a specific percentage of tuition revenues.**

Adoption of either of these options will reduce the opportunity for "gaming" the funding mechanism and level the playing field related to the provision of services to non-resident students. This recommendation recognizes that non-resident student enrollment provides economic and social benefits to the State of Idaho.

RECOMMENDATION 7: *Special Allocations:*

When special allocations are made to more than one of the institutions for the same purpose (such as technology grants), distribute funds to the institutions in proportion to the enrollment, number of staff members, size of budget, or other measure of workload related to the special allocation.

This recommendation addresses the inequities introduced to the base when special allocations above the base are made on a "flat grant" basis. Equity is achieved when the allocation is made on the basis of workload.

RECOMMENDATION 8: *Base Budgets:*

A new base should be calculated based on "best practices," the guiding principles or criteria for an allocation model, and using the recommendations for weights and the three-year rolling average of student counts enumerated above. In future years, this calculated amount should be the continuation base budget to which or from which adjustments are made. The base amount should be phased in over three years.

This recommendation if accepted by the Board would provide a methodology to calculate a new base that encompasses the desired characteristics of a good resource allocation model, including equity, adequacy, mission-sensitive, size-sensitive, and reliant of valid and verifiable data.

Simulations of what new base budgets under options 1 or 2 might be for the institutions were completed and are summarized in Exhibit F-12, compared to funding for FY 2001.

EXHIBIT F-12
EXAMPLE NEW BASE BUDGET

	BSU	ISU	LCSC	UI
Instruction:				
Option 1	44,117,652	37,388,189	6,268,369	40,777,935
Option 2	36,773,322	32,563,472	5,426,198	37,083,095
Research	2,360,351	2,735,808	116,831	14,002,030
Public Service	604,966	652,997	215,415	2,776,369
Support Programs	24,023,000	19,116,000	4,963,140	17,462,600
Institutional Support:				
Option 1	14,221,194	11,978,599	2,312,751	18,754,733
Option 2	12,752,328	11,013,655	2,144,317	17,831,024
Physical Plant	14,323,879	12,901,008	2,979,701	16,151,405
Total:				
Option 1	99,651,042	84,772,600	16,856,206	109,925,072
Option 2	90,837,846	78,982,940	15,845,601	105,306,523
FY 2001 Funding	86,269,100	76,779,600	15,576,700	105,468,400
Difference:				
Option 1	13,381,942	7,993,000	1,279,506	4,456,672
Option 2	4,568,746	2,203,340	268,901	-161,877

It should be emphasized that the amounts shown in this exhibit are for illustration purposes only. The universities and Board staff will be working with the consultants in the next two months to calibrate and fine-tune the recommendations to bring to the Board at its August meeting.

APPENDICES

APPENDIX A: MISSION-RELATED VARIABLES TO USE IN PEER/COMPARATOR SELECTION

MISSION-RELATED VARIABLES TO USE
IN PEER/COMPARATOR SELECTION, BOISE STATE UNIVERSITY

Variable	Value
Carnegie Classification	Doctoral I, II, Comprehensive I or II
Number of students	Headcount Percent full-time Percent undergraduate
Location	Rated 1 - 9, based on population Weighted
Number of degrees awarded	Total Number of associates Number of bachelors Number of masters Number of doctorates Number by two-digit CIP code: Education Business Social Science Public Administration/Affairs Performing Arts Engineering
Percent degrees awarded	Percent associates Percent bachelors Percent masters Percent doctorates Percent by two-digit CIP code: Education Business Social Science Public Administration/Affairs Performing Arts Engineering
Number of staff	Total Full-time Total Faculty Total Non-faculty Part-time Total Faculty Total Non-faculty
Percent staff	Percent Full-time Total Faculty
Percent full-time faculty	As a percent of total faculty
Total research expenditures	Total dollars
Number of separate disciplines	Count of 6-digit CIP coded disciplines

MISSION-RELATED VARIABLES TO USE
IN PEER/COMPARATOR SELECTION, IDAHO STATE UNIVERSITY

Variable	Value
Carnegie Classification	Doctoral I, II, Comprehensive I or II
Number of students	Headcount Percent full-time Percent undergraduate
Location	Rated 1 – 9, based on population, weighted
Number of degrees awarded	Total Number of associates Number of bachelors Number of masters Number of doctorates Number by two-digit CIP code: Health Professions Biological Sciences Physical Sciences Education
Percent degrees awarded	Percent associates Percent bachelors Percent masters Percent doctorates Percent by two-digit CIP code: Health Professions Biological Sciences Physical Sciences Education
Number of staff	Total Full-time Total Faculty Headcount students/faculty Total Non-faculty Part-time Total Faculty Total Non-faculty
Percent staff	Percent Full-time Total Faculty
Percent full-time faculty	As a percent of total faculty
Total research expenditures	Dollar amount
Number of separate disciplines	Count

MISSION-RELATED VARIABLES TO USE
IN PEER/COMPARATOR SELECTION, LEWIS-CLARK STATE COLLEGE

Variable	Value
Carnegie Classification	Baccalaureate I and II. 2-year with B.A.
Number of students	Headcount Percent full-time
Location	Rated 1 – 9, based on population
Number of degrees awarded	Total Number of associates Number of bachelors Number by two-digit CIP code: Business Nursing Criminal Justice Social Work Education Technology
Percent degrees awarded	Percent associates Percent bachelors Percent by two-digit CIP code: Business Nursing Criminal Justice Social Work Education Technology
Number of staff	Total Full-time Total Faculty Total Non-faculty Part-time Total Faculty Total Non-faculty
Percent staff	Percent Full-time Total Faculty Total Non-faculty Percent Part-time Total Faculty Total Non-faculty
Percent full-time faculty	As a percent of total faculty
Number of separate disciplines	Count of 6-digit disciplines

MISSION-RELATED VARIABLES TO USE IN PEER/COMPARATOR SELECTION, UNIVERSITY OF IDAHO

Variable	Value
Carnegie Classification	Research I and II, Doctoral I and II
Number of students	Headcount Percent part-time Percent graduate Full-time equivalent students
Location	Rated 1 – 9, based on population
Number of degrees awarded	Total Number of bachelors Number of masters Number of first professional Number of doctoral Number by two-digit CIP code: Agriculture Forestry Mines Architecture Engineering Education Foreign Languages Law
Percent degrees awarded	Percent bachelors Percent masters Percent first professional Percent doctoral Percent by two-digit code: Agriculture Forestry Mines Architecture Engineering Education Foreign Languages Law
Land grant	Designation as land-grant university
Number of staff	Total Full-time Total Faculty Total Non-faculty Part-time Total Faculty Total Non-faculty
Research expenditures	Total dollars expended
Percent staff	Percent Full-time Total
Percent full-time faculty	As a percent of total faculty
Number of separate disciplines	Count of 6-digit CIP codes offered

APPENDIX B: INFORMATION IN THE COMPONENTS OF STATE/SYSTEM FUNDING FORMULAS

EXHIBIT B-1
INSTRUCTION FUNDING FORMULAS

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBF	PBF	BFPR /SR	All Inclusive	Itemized	Credit Hours	Head Count	FTES/ FTEF	Discipline	Level	Type of Institution	Fixed	Variable
Alabama	x				x	x			x	x			x
Arizona *			x		x	x		x		x			x
California *			x		x	x		x	x	x	x	x	x
Connecticut			x		x	x		x	x	x	x		x
Florida	x		x		x	x		x	x	x	x		x
Georgia			x		x	x		x	x	x			x
Idaho *	x			x		x			x	x	x		x
Illinois *			x		x	x			x	x	x		x
Kansas *	x				x	x				x	x	x	x
Kentucky	x				x	x			x	x	x		x
Louisiana *	x				x	x			x	x	x		x
Maryland	x				x	x			x	x	x		x
Minnesota *	x				x	x			x	x	x		x
Mississippi		x	x		x	x			x	x	x		x
Missouri	x				x	x			x	x			x
Montana	x		x		x	x		x	x	x			x
Nevada			x		x	x		x		x			x
New Mexico	x		x		x	x			x	x	x		x
North Dakota	x		x		x	x			x	x	x		x
Ohio *	x				x	x		x	x	x	x	x	x
Oklahoma *	x				x	x		x	x	x	x		x
Oregon		x	x		x	x			x	x	x		x
Pennsylvania *			x		x	x		x		x		x	x
South Carolina			x		x	x		x	x	x	x		x
South Dakota *			x		x	x		x	x	x			x
Tennessee			x		x	x		x	x	x	x		x
Texas	x				x	x			x	x	x	x	x
Utah *			x		x	x			x	x	x		x
West Virginia *	x				x			x			x		x

*** indicates more than one functional area included in this formula.**

EXHIBIT B-2
RESEARCH FORMULAS USED BY STATES/SYSTEMS

State	Calculation Method			Approach Base					Differentiation			Costs	
	RPBF	PBF	BFPR/ SR	All Inclusive	Itemized	Credited Hours	Sponsored Research $	FTES/ FTEF	Discipline	Level	Type of Institution	Fixed	Variable
Alabama		x		x		x			x	x			x
California *			x		x	x			x	x	x	x	x
Florida *			x		x	x			x	x	x		x
Georgia *			x		x	x		x	x	x			x
Kansas *	x				x	x				x	x	x	x
Kentucky		x		x			x					x	x
Louisiana	x				x	x			x	x	x		x
Maryland		x			x	x			x	x	x		x
Mississippi	x				x			x	x				x
Montana *	x		x		x	x		x	x	x			x
Oklahoma *	x				x	x		x	x	x	x		x
Oregon		x		x				x			x		x
Pennsylvania *			x		x	x		x		x		x	x
South Carolina		x		x			x						x
South Dakota *			x		x	x		x	x	x			x
Texas	x				x			x					x
West Virginia	x			x				x					x

**** indicates more than one functional area included in this formula.***

EXHIBIT B-3
PUBLIC SERVICE FUNDING FORMULAS USED BY STATES/SYSTEMS

	Calculation Method			Approach		Base			Differentiation			Costs	
State	RPBF	PBF	BFPR/ SR	All Inclusive	Itemized	Credit Hours	Expend Mission	FTES/ FTEF	Discipline	Level	Type of Institution	Fixed	Variable
Alabama		x		x		x			x	x			x
California *			x		x	x			x	x	x	x	x
Florida *			x		x	x			x	x	x		x
Kansas *	x				x	x				x	x	x	x
Kentucky	x				x	x			x	x	x	x	x
Maryland		x			x	x			x	x	x		x
Mississippi	x			x			x				x		x
Montana *	x		x		x	x		x	x	x			x
Oklahoma *	x				x	x		x	x	x	x		x
Pennsylvania *			x		x	x		x		x			x
South Carolina		x		x			x						x
Tennessee		x			x	x		x	x	x	x	x	x

* indicates that more than one functional area included in this formula.

EXHIBIT B-4
ACADEMIC SUPPORT FORMULAS USED BY STATES/SYSTEMS

	Calculation Method			Approach		Base			Differentiation			Costs	
State	RPBF	PBF	BFPR/ SR	All Inclusive	Itemized-	Credit Hours	Head Count	FTES/ FTEF	Discipline	Level	Type of Institution	Fixed	Variable
Alabama	x	x			x	x			x	x			x
Arizona *			x		x	x		X		x			x
California *			x		x	x			x	x	x	x	x
Connecticut	x		x		x	x	b	x		b	x	x	x
Florida	x		x		x	x	x	x	x	x	x		x
Georgia *		x			x	x			x	x			x
Kansas *	x				x	x				x	x	x	x
Kentucky	x	x			x	x	x			x	x	x	x
Louisiana *	x				x	x			x	x	x		x
Maryland	x	x			x						x		x
Minnesota *	x				x			x	x	x	x		x
Mississippi		x			x	x		x	x	x	x		x
Missouri	x				x	x			x	x			x
Montana *	x			x									x
Nevada	x	x			x	x		x		x		x	x
New Mexico	x	x			x	x				b	x		x
North Dakota	x				x			x		x			x
Ohio	x				x	x		x	x	x	x	x	x
Oklahoma *	x				x	x		x	x	x	x		x
Oregon	x	x			x	x	b	x	x	b	x	x	x
Pennsylvania *	x				x	x		x				x	x
South Carolina		x			x	x			x	x			x
South Dakota *			x		x	x		x	x	x			x
Tennessee	x	x			x			x			x		x
Texas	x				x	x				x		x	x
Utah *	x		x		x	x			x	x	x		x
West Virginia *	x				x			x			x		x
*** indicates that more than one functional area included in this formula.**													
b indicates the state uses the Association of College Research Libraries formula.													

EXHIBIT B-5
STUDENT SERVICES FORMULAS USED BY STATES/SYSTEMS

	Calculation Method			Approach		Base			Differentiation			Costs	
State	RPBF	PBF	BFPR/ SR	All Inclusive	Itemized	Credit Hours	Head Count	FTES/ FTEF	Discipline	Level	Type of Institutions	Fixed	Variable
Alabama	x				x		X					X	X
Arizona *			x		x	x		x		x			x
Florida	x				x		x	x		x	x		x
Georgia *		x			x	x			x	x			x
Kansas *	x				x	x				x	x	x	x
Kentucky	x				x		x				x	x	x
Louisiana *	x				x	x			x	x	x		x
Maryland	x			x									x
Minnesota *	x				x			x	x	x	x		x
Mississippi	x				x	x		x				x	x
Missouri	x				x	x			x	x			x
Montana *	x		x		x	x		x	x	x			x
Nevada			x		x		x	x			x	x	x
New Mexico			x		x		x					x	x
North Dakota *	x				x		x			x		x	x
Ohio *	x				x	x		x	x	x		x	x
Oklahoma *	x				x	x		x	x	x	x		x
Oregon	x				x		x					x	x
Pennsylvania *	x				x	x		x				x	x
South Carolina	x				x	x	x					x	x
South Dakota *			x		x	x		x	x	x			x
Tennessee	x				x	x	x	x	x		x		x
Texas	x				x		x					x	x
Utah *			x		x	x			x	x	x		x
West Virginia *	x				x			x			x		x

* indicates that more than one functional area included in this formula.

EXHIBIT B-6
INSTITUTIONAL SUPPORT FORMULAS USED BY STATES/SYSTEMS

State	Calculation Method			Approach		Base				Differentiation			Costs	
	RPBF	PBF	BFPR/ SR	All Inclusive	Itemized	Credit Hours	Head Count	Other	FTES/ FTEF	Discipline	Level	Type of Institutions	Fixed	Variable
Alabama		x		x		x				x	x			x
Arizona *			x		x	x			x		x			x
California *			x		x	x			x	x	x	x		x
Florida		x			x	x							x	x
Georgia *		x		x		x				x	x			x
Kansas *	x				x	x					x	x	x	x
Kentucky		x			x	x	x			x	x	x	x	x
Louisiana *	x				x	x				x	x	x		x
Maryland	x				x			x						x
Minnesota *	x				x				x	x	x	x		x
Mississippi		x			x	x				x	x	x		x
Missouri	x				x	x				x	x			x
Montana *	x			x										x
Nevada		x		x				x					x	x
New Mexico		x	x		x			x					x	x
North Dakota *	x			x			x						x	x
Ohio *	x				x	x			x		x	x	x	x
Oklahoma *	x				x	x			x	x	x	x		x
Oregon	x	x			x		x						x	x
Pennsylvania *	x				x	x			x				x	x
South Carolina		x		x		x			x	x	x		x	x
South Dakota *			x		x	x			x	x	x			x
Tenessee	x	x		x					x				x	x
Texas	x				x		x	x					x	x
Utah *			x		x	x				x	x	x		x
West Virginia *	x				x				x			x		x

*** indicates that more than one functional area included in this formula.**

EXHIBIT B-7
OPERATION AND MAINTENANCE OF PLANT FORMULAS USED BY THE STATES/SYSTEMS

State	Calculation Method			Approach			Base				Differentiation		Costs	
	RPBF	PBF	BFPR/ SR	All Inclusive	Itemized	NSF/ GSF	Replace Cost	Acres	Credit Hours	FTES/ FTEF	Type of Building	Level	Fixed	Variable
Alabama	x				x	x					x	x		x
Arizona *			x		x				x	x		x		x
California *			x		x	x			x			x	x	x
Connecticut	x	x	x		x	x	X				x		x	x
Florida	x				x	x					x			x
Georgia	x				x	x								x
Kansas	x		x		x	x								x
Kentucky	x	x			x	x					x			x
Louisiana *	x				x	x								x
Maryland	x	x			x	x	X							x
Minnesota *	x				x					x		x		x
Mississippi	x				x	x					x			x
Missouri	x				x	x					x	x		x
Nevada		x	x		x	x	X	x						x
New Mexico			x		x	x					x			x
North Dakota	x				x		X	x		x		x		x
Ohio	x				x	x				x	x	x	x	x
Oklahoma *	x				x	x				x		x		x
Oregon	x	x	x		x	x		x			x			x
Pennsylvania	x				x	x	X					x	x	x
South Carolina	x		x		x	x	X	x		x	x			x
South Dakota *			x		x					x				x
Tenessee	x				x	x			x		x			x
Texas	x		x		x	x	X	x		x	x		x	x
Utah *			x		x	x								x
West Virginia *	x				x					x		x		x

*** indicates that more than one functional area included in this formula.**

EXHIBIT B-8
SCHOLARSHIPS AND FELLOWSHIPS FUNDING FORMULAS USED BY STATES/SYSTEMS

	Calculation Method			Approach		Base			Differentiation			Costs	
State	RPBF	PBF	BFPR/ SR	All Inclusive	Itemized	Credit Hours	Head Count	Tuition Revenue	Discipline	Level	Type of Institution	Fixed	Variable
Kentucky		x		x				x					x
Maryland		x		x				x					x
Mississippi		x		x				x					x
Montana		x		x				x					x
Oklahoma *	x				x	x	X		x	x	x		x

*** indicates that more than one functional area included in this formula.**